

SEQUENCE LISTING

<110> Vicuron Pharmaceuticals Inc.

<120> Genes and proteins for the biosynthesis of the glycopeptide antibiotic A40926

<130> G69039

<160> 50

<170> PatentIn version 3.1

<210> 1

<211> 71138

<212> DNA

<213> Nonomuria

<220>

<221> misc_feature

<222> (40)..(1140)

<223> ORF1; negative strandedness

<220>

<221> misc_feature

<222> (1259)..(2329)

<223> ORF2; negative strandedness

<220>

<221> misc_feature<222> (2558)..(5161)

<222> (2558)..(5161)

<223> ORF3; negative strandedness

<220>

<221> misc_feature

<222> (5266)..(6231)

<223> ORF4; negative strandedness

<220>

<221> misc_feature

<222> (7183)..(8292)

<223> ORF5; positive strandedness

<220>

<221> misc_feature

<222> (8320)..(8973)

<223> ORF6; positive strandedness

<220>

<221> misc_feature

<222> (9069)..(9659)

<223> ORF7; positive strandedness

<220>

<221> misc_feature

<222> (9708)..(10667)

<223> ORF8; negative strandedness

<220>
<221> misc_feature
<222> (10670)..(11896)
<223> ORF9; negative strandedness

<220>
<221> misc_feature
<222> (11950)..(13419)
<223> ORF10; negative strandedness

<220>
<221> misc_feature
<222> (13479)..(14741)
<223> ORF11; negative strandedness

<220>
<221> misc_feature
<222> (14823)..(16019)
<223> ORF12; negative strandedness

<220>
<221> misc_feature
<222> (16009)..(17163)
<223> ORF13; negative strandedness

<220>
<221> misc_feature
<222> (17185)..(18366)
<223> ORF14; negative strandedness

<220>
<221> misc_feature
<222> (18462)..(18671)
<223> ORF15; negative strandedness

<220>
<221> misc_feature
<222> (18668)..(24259)
<223> ORF16; negative strandedness

<220>
<221> misc_feature
<222> (24278)..(36529)
<223> ORF17; negative strandedness

<220>
<221> misc_feature
<222> (36760)..(39021)
<223> ORF18; negative strandedness

<220>

<221> misc_feature
<222> (39153)..(39851)
<223> ORF19; negative strandedness

<220>
<221> misc_feature
<222> (40125)..(41732)
<223> ORF20; negative strandedness

<220>
<221> misc_feature
<222> (41772)..(42584)
<223> ORF21; negative strandedness

<220>
<221> misc_feature
<222> (42868)..(44130)
<223> ORF22; negative strandedness

<220>
<221> misc_feature
<222> (44226)..(46355)
<223> ORF23; negative strandedness

<220>
<221> misc_feature
<222> (46632)..(48578)
<223> ORF24; positive strandedness

<220>
<221> misc_feature
<222> (48575)..(54868)
<223> ORF25; positive strandedness

<220>
<221> misc_feature
<222> (54865)..(58056)
<223> ORF26; positive strandedness

<220>
<220>
<221> misc_feature
<222> (58152)..(58985)
<223> ORF27; positive strandedness

<220>
<221> misc_feature
<222> (59046)..(60641)
<223> ORF28; positive strandedness

<220>
<221> misc_feature
<222> (60874)..(62445)
<223> ORF29; negative strandedness

<220>
<221> misc_feature
<222> (62887)..(63312)
<223> ORF30; positive strandedness

<220>
<221> misc_feature
<222> (63469)..(64587)
<223> ORF31; positive strandedness

<220>
<221> misc_feature
<222> (64599)..(65240)
<223> ORF32; positive strandedness

<220>
<221> misc_feature
<222> (65237)..(66541)
<223> ORF33; positive strandedness

<220>
<221> misc_feature
<222> (66538)..(67335)
<223> ORF34; positive strandedness

<220>
<221> misc_feature
<222> (67332)..(68618)
<223> ORF35; positive strandedness

<220>
<221> misc_feature
<222> (68685)..(69423)
<223> ORF36; negative strandedness

<220>
<221> misc_feature
<222> (69608)..(70894)
<223> ORF37; positive strandedness

<220>
<221> misc_feature
<222> (71065)..(71138)
<223> attL site, remnant

<400> 1
gggggctggg cctgctgcgg ctgcgcgagcg ggctgacggt caggagacga accccgcgcc 60
ggggcgggtc gtcctgagtg cctgggctgc ggcgacgtcg ccgcagcctg ccaggccgag 120
cccgtcctcg atctcggcac ccaggaggcc gagcacgta cggacccccg gtgcgccgtc 180

cgcgggccaga ccccagatca cggggcggtcc gacgagcaca cccgacgccc cgagcgccag 240
cgcccttgagg acgtcgggtc ccgaccggac gccaccatcg agcatgatct cgcagcggcc 300
cccgaacgtc tccgccaccc cgggcagcgc gtcgagactg gccacggcgc cgtcgagctg 360
acgtccgccc tgggttgaga ccacgatgcc gtcgatgccg aggtccgcgg cgcggcgggc 420
gtcctcgggg tgcagaatgc ccttgaccac cagcgggagc ccgctggcgg cccggagggt 480
ctcgaggtag gaccagtcca ccgcggcgga gagctccatg gccgtgtgcg ccgccagcgc 540
ggagccgccc gaggcacccc gatgagcctc ggtcccggag ttcgccgtca ggtgcacggg 600
ccgcacgtgc gggggcaggc ggaaccgggt gcggatgtca cgtggcctgc ggcccatcca 660
cggcacatcg agcgtgagca tcaacgcccg gcaccccgcg tcctcggccc ggcggatcag 720
gccgagggtg gcggcggtgt cgcgaaggca gtagagctgg aaccagacgt gtccccccag 780
ggcggtagcg tcctccaccg ggacgctgct caaggtgctg acggtgaacg ggaccccggc 840
gtcccgcgcc gcccgggccc tcgccagctc accgtcggga tgcacgagcc ggtggtaggc 900
gacgggggccc accgccaccg gcatcgtcgc ggggtggccc agcagcgtcg cacgggtgga 960
gcacgccgac acgtcctgga gcaccccgcg caccaggaac acccggtcga aggcggcccg 1020
attcgacagg agggctgtgt cgcggccgct cccgccgtcg atgaagtccc ggacgtcggc 1080
ggggaggacc ttggcggcga tctcctcgta ctcggcgagg cagacgggac tttcgtgcac 1140
gctgtcagga cgctcgggcc cgctgccggg acgtcgggc ccgctgccgg gacgtcggg 1200
cccgtgccg ggacgtcgg gcccgctgcc gggacgtcc cgcacgtgc tgggacgtc 1260
atgcacgtg ctgggacctc gccacctcga cggcctcgta gagggccttg atgttggcgc 1320
ctccgaaggt gcgggctccc tgccgctcga tgacctcga gaagagggtc tcgcgcggat 1380
gggtggacgc cgtgaagatc tggaagagct gtccgccgtg atcctcgtca gcgagcagtc 1440
ccgtcgcgcg caactgggtc accgtgtgac cccggatctg gatccgtgat tcgagcaggt 1500
cgtagtagct gcccggcgtg ctgaggaagc ggacgccccg ctcggacagg gtgttcacgg 1560
cgtgcacggc gtccgaggag gagaaggcga cgtgctgcac cccggcaccg gcgtgccgtt 1620
cgaggaacat gtcgatctgg ccggcctcgg ccacggggtc gggttcgatg agtgtcagcg 1680
tgacggcgcc ggaggcgctc tgcaccacct tggactccat ggctgggtg ccgacctcga 1740
tgcgttcctt gaaggtctcg ctgaagccga ggggtggcgac gtagaagtcg gtgatgatgt 1800
cgaggtcacc cgtgggcagg cacacggcga agtggtcgat gtcgagcagc tccgccgcgt 1860
ccgcaccgga ctcggcgggc gacggagcct cggagaagcc gaccggcagg cgggggtcgt 1920
cgccgggggtc ccgctggacg aggggtgtgga ccacgtcgcc gaagccgccc atcgcggcgg 1980
agcaggccgg cccggggccc ggggtgccggg acggggaccg tacgggcccg gcgccggcgg 2040
ccacggcatg ggtgaagacg acgtcgacgt cgggggtccg cagggcgatg tcggcgaccc 2100

cgctcgccgtg cgtccgcaca taggccgaag ccgcatggcc gtcggacgtg gcctgggtga 2160
ggacgagggg gatgcggccc tgccggagcg cgacgtcgcg atggtcgctg gcgttcgccc 2220
tgcccacgac ggccaagcgg tattcgtcgg tccaagggag agtggcgacc ttcagatccg 2280
ctacgtacat ttcgacgtaa tcaacggcga gaggcggaag cgattccata ttccgacgct 2340
acggccgggc ggggaggttc gcaccgtgtc cattggacgc gctcgcaggc cgcgctcaca 2400
gcagattccg gtacattccc gaggcctttt caggccggcg tggacggtcg gcggatcagg 2460
cttcataaaa agcctgccct ggcgtattct cgggttaatc aaccccgatg gatatacctgc 2520
ccgaggccgg cgaattcggc ttgtcgaact cttegtctta cagccgcact gcctcacgcg 2580
gctcgcggcc ggctgtggcc gtcgccttat cggcgatgtc cgcggcgaag aggttgccca 2640
ggtcaccccg agtctgtacg tggagtttcc gatagatcct ggtgagatgc tgctcgaccg 2700
tgctgcgcgt gatgtagagc gcctcggcga tctcacgatt ggtgtgcca cgggcggcga 2760
gcacggcgac ccgccgttcg gcgccgtca acggtgcggt ctcaccatga tcgtgctgtg 2820
cggcgagcct cctcatcaag ggcttcgcgt tgcactcgcg ggccagctcc tgcgcccga 2880
cccagtaggc ccgggcctcg tccttgccgc ccttgagctg tggggctccg gcgaggtcgc 2940
agagggaaag ggccagctgg tagcgatcct gggcggcctc cagcgcgtcc acggactgca 3000
tcagcaaccg ctggcgctgt gcgggcttgc tcagctgcgc gtgcaggcgg agggcgaccc 3060
cgtacgtccg caggtcaccg gaggaggtgt gggcgatctg ggccgtgacc agatcggccg 3120
ccctgcgacg ccagcccagt tgcaggcacg ctgcgcgcgc gccgaggcgc caggggacca 3180
cgtcggacag gctgctgccc cagcgtgga ccgcctgccc gcatgccagg aagccggcga 3240
aggcggcgcg aggctgctcc gtgaccaggt ggtagtgcg cctcgcgagc tcgtagccga 3300
tcccgaaggc ggtctccgcc gtctcgcggg gcatcggcac cgccacggtc gccttcgcct 3360
cgtcgaggtg gcccatcgcg gtctgggcat ggagcagggg gctgagtggc gcgccgatcg 3420
cgacgcccc a gccgtgggc tgcagtatgg tcagcgcctc ctgcgcatgg gcctcggccc 3480
ccgccaggtc gcccttgccg caccgcgtct ccgccggat ggccgagatg atcgcttcc 3540
agggtggcgcg cttegtcacc ccgggctcct tgaggagcgt ctgcaggag gccgccacct 3600
ccgacactcc gcccagcagc agtgccatca gagccgagat gatgctgtcc atcgctcat 3660
ccgtcggctc gcctgacgc aggatccggc gcgcgtcctc gactgtctgg cccatcgagc 3720
cgccggcgga ccggggcaat ctgtcgagaa gcaccgggtg gacgtggcac atcgcgatca 3780
cgccggcgga ccggggcaat ctgtcgagaa gcaccgggtg gacgtggcac atcgcgatca 3780
aggacgcgtc ggcgccctg tcggcgacgc tcggcctcag ccgatcgatc agctccgccg 3840
cgtcggcgaa ccggccgtac cacagcagct ggccgaacag ctccatcccg tgagatccac 3900
gcaacgcacc cgagcgcgtg gcgtcgagca gatcgggcac gtgacgtgcc gccactgccg 3960

ggtcgacgcg ccactccgcc gcggcgagca tcaccttcac gtccagccgg cgaggcgtgc 4020
cccagccgga cgccagggcg agccgtaagc acttcatgac agcgacgaaa tcaccctcgt 4080
cgaacgcctg ccttcccgtc tcgacgagga cgtcgaaagc ccactcctca cccgaccagc 4140
ccgcctccag caagcgcggtg gccacagccg acggtggggc tccccgccga tggaggatct 4200
ccgcggcccc cgaggagatc tccatcctgc cgtaggaggt catgcgcccc agtacggcca 4260
ggcggccccg ctcatgacga aagcgcccc cggccaggag cccggcgcg cccagcatcc 4320
ccatcgagcg tgtcgcgga ggagggggcga tgcccacgag ctgcccacc gcgtccggcg 4380
tggcgtgctc gccgaggacg gccaccgcct ccgcgacgcg gacggcctcc ggctcgcagc 4440
catgaacgca cgctgccacc gcgctcatga aggagtcgcc gaccacgagc ccgggcgcgc 4500
cggcctcctg atcctcgatc agcgcccga ccagcagcgg gctgccgccg ctgaagcggc 4560
agaggtcgtc ggcgagctgg tcggccgtct cggccccgag gtgctcgggt gcgaactgcc 4620
tgaccgccgg acggggcagg agcggcagct cgaccagctc gatgccgggc aggcgagca 4680
aggactcggc gacatggggg agagggggcg gcggccggtc ctggcagatc gtgacggcga 4740
tcatcatcct ggtgtccgtc agcagggggc tcatggacag gatggccagc agggacggat 4800
cgtcggcgag atccacgtcg tcgatcgtca ggaggatcgg gttcgccctc gccatctgga 4860
acagggagac gcagacgtcc tcgaccgcgt caccgcccct gcgcgcggtc agccgctccg 4920
ctgccccgcg gcccaggatc tggtcggcga cccccagtc cagcgactgc tccgccggcg 4980
tgcagcgggc cgtgaccagc cggatgccgg ccgcgatgga tcgcatgccg agctcgtgga 5040
ggatggcggc cttgccgccg accacaggcc ccgtgatgac ggccactcca ccgcggccgg 5100
ccgcgggtgga atcgagcaac ctcgtcagac tcttcagttc acgatctcgc ccgaacagca 5160
ctcttgctcg tcccccaagc ggttcgtcga cttggtttgc cgtgtgcctg atctggctct 5220
ggtcccgtcg ctctacatac ggccgcccgg ctcatccact cgtgctcatc cagcggccag 5280
atcggtcgcc cgcccctcca ggcatccgc gaacgctgcc cagatctggg catgatccct 5340
ggcgcatctc gcgacaacgg tgccccaatg cggcggcact ccgcgcaaga tcctttcca 5400
ttcctgcccg tcgatggagt gcaatgatag cattcgcaac aaaattcggc cggtttcggc 5460
cagacgtaat gcgggatcgg ccttgagcct ttccagcacg gcttggcggc ctccggccgc 5520
gacgtggccg aaatcctgtt ctgcccgcgc cagtaattcc ggcttggctc ttaatctccg 5580
gctcccgtcc ggaatcgggc tctcaccgtg ctccaaccgg cctctcacat cccggaccgt 5640
ctccggggag atgccgacct gtttggcgac ctggcgagc gaaaggctcc gatggctgcg 5700
gatgagctcg gcggcgagtc tcctcccctc tgagctgtcc accggacgga tgcgcccgtc 5760
ccgcccgaatt ctggcctcgt caccgccttg tcctctgcgc ctgcgcaggt cggccaccgt 5820
gccggcgag atgccggctc ccgaggccac ccgtcgatca gaccactgcg gatgtgtccc 5880

gatgatccgg acggccgcac gcttgcggtc ggccagtgag agcggcagcc cgtgccgcac. 5940
gttcgcctcg acggccagga cgaaggcgtc cgattcgggtg ccgtcgatca gcctcaccga 6000
gattgttgtt tcacccctga cccgcgccac cttcaaccgg tgcaggccgt cgatcaccgg 6060
catcgttgga cgggtggacga gaatgggagg aagctcccct tgtgccgaca acaggggtctc 6120
gacgtgctct ggatcctcgc ccgaagtccg ggggtgagtac acagaggaca gccgggacag 6180
ctcgatttcg acgacaggga gagtggctat gtcaactccc gtcgggtcca cctagcctcc 6240
gattcgatta gcgtcatatc ggagccgggg gcgttcaaaa aacaaccag ccgcgtgcgc 6300
cgcgcgacc ttcgacgatt ccccgtcgcg cctgcagcat ctgggtcccgg gcaagcctgg 6360
acttcccggc gcgagctgca taaatcgatc ggccaagtgc tctgtcgaga gaatgcgtcg 6420
catcctcttt tcttcggcaa ctccacgcgg caaagaattg gacgctgtcg ccgcgaatcc 6480
gtagccgtct acctcatcga attgcagaac gcttcccgtt agcattccga tcaactccgac 6540
tttcggttag gccttcctcc ggaagggtta aggaggctgt gcaggtcgaa ccacccccta 6600
tcccggacat ccacccccct agtttcggat aagaccgatg cgcgggggtg cgcctctgtc 6660
gcgaagcgga gtatccgggtg ctggaccgcc cgaatcgagc ggtcaccatg cgtgtcaatc 6720
cgtgtgtatt ggcattgcgc gtcggcgcca gcccggggg gccgcggcg tcccacgggt 6780
tcgctcatga caccgtctcc aggtgagggg gatcgcggtg gccggccacg ggcgcgctgc 6840
cgcagcggcg gccatgctga tctgcccatt gaccagcagg ccgacgggtg ggtcccggcg 6900
gacggccggc tcccgggtaca acgtacgtca gttcttctcg gcgatctagg ggagtgggag 6960
gggtgccttc gccgggcatg cgggaggcct gtcccttggc aattgacagg cgtgaatgca 7020
gaaaggagcg cggccacctc tgacctgccg agtaaggga tggattactc atcaatggcg 7080
ccggtggcca cggaaactgc cggcgatcc ggcgtgtcca aatggcgcg tgcccaggcc 7140
cgccgatgga caccgcccgg tgcgcgggct taagaagtag ccgtgaccct ggagaggacg 7200
ctcatcgctg gcaccggctt gatcggcacc tccgcccgc tgcctctcg cgagaagggg 7260
gtggcggtct acctgtccga cgtcgacgca catgccgtac ggctggcgcg agcgctcggc 7320
gcggggcagg agtggaccgg tcagcgcggtg gacctggcat tgatcgccgt gccccgccc 7380
agcgtggggc agcggctggc cgatctgcag cagcggcggg ccgcgcgggc gtacaccgat 7440
gtgaccagcg tcaaggtcga tccgatcgcc gacgcggagc ggctcggctg cgacctgacc 7500
tctatgtcc ccggacaccc gctcgccggc cgggagcggc ccggcccggc cgccgcccgt 7560
gccgatctgt tcttgggacg tccctgggag ctctgcccc gccctgagac ggggtgcggat 7620
gccgtgcggc tggccaggga gctggctctg atgtgcgggg cggagcccta caccgtgagt 7680
gcgggagagc acgacacggc ggtggcgctg gtgtcgacg ccccgcacgt ggccgcgtcc 7740
gcggtggcgg cgcggctgag ggacggcgac gacgtcgcg tggccctggc ggggcagggg 7800

ctgcgcgacg tgacgcggat cggcgcaggg gacccctgc tgtggcggat gattctcgcc 7860
gcgaacgccc tgccggtggc cgggggtgctg gagcggatcg cggccgatct cggcgcggcg 7920
gcctcggcgc tgccggtccgg cgatctcgac gatgtgacgg atctgctgcg gcgcggcgtg 7980
gacggccacg gccggatccc cgacaagcac ggccggcccg cgctgacta cacggtgatc 8040
caggtggtgc tgcaggatcg gccgggagag ctggcgaggc tcttcaacgc ggccggggctc 8100
gcggacgtca acatcgagga catccgcctg gagcactcg cggcctgcc ggtcgggggtg 8160
gtcgaggtct ccgtgcgccc ggaggacacc ggccggctca ccgaggcact gcgcttccac 8220
ggctggcacg tcccgcctgt ccccgacggc aactcgagga tcgaccggac gcgagctatg 8280
gtgtcagact gacagcccc gatcgagacg gcgacacgaa tgcgcgttct ggtggtggag 8340
gaccaagtcg acctggccga ctccggtggcg cgggtgctgc gtcgcgaggg catggccgtc 8400
gatgtcagtc atgacggcga tgacgcacag gagcgcctct ccgtgatcga ctacgacgtc 8460
gtggtgcttg atcgggatat tcccggcgct catggcgacg agctgtgcg tgagatcgcc 8520
gtggacgatc gcaggacccg ggtgctgatg ctcaccgcgt ccgggacgac cgctgaccgg 8580
gtggcgggccc tgagcctggg cggcgacgac tatctgccga agccgttcgc cttcgccgag 8640
ctggtggcgc gcatccgcgc cctgggcagg cgcgcgcatc ctcccgcgc gccgatcctg 8700
gtccacggcg acctgcggct cgatccggcg caacgggtgg cgatcagggg cggcatgcgg 8760
ctgccgctga ccaccaagga gctggcggtc ctggagcatc tgctgaccgc gcgcggccgg 8820
gtggtgtcgg ccgaggagct gctcgaacgg gtctgggacg agcaagccga cccgttcacc 8880
accaccgtga aggcgacgat caaccggctg cgctcgaagc tcggccagcc gccggtgatc 8940
gaaaccgtcc cgcgcgaggg atatcgcatc tgatccgcgc ggtoacagag cggtcacacg 9000
ttctctgacc ctctgtcac cttctgctcc gtagaactgg tgtcagatca ccagactgga 9060
ggagagggat gaggagaagc gaggggtgacg acgaaccacg cactctcccg cctcggggccc 9120
gggaccgggt gtacaccgcg gtcacgcggg tgctcgccgt gtcctgctg ccctgggcgt 9180
tcgtccgtca gcccggccgc gcccgcgagc tggcctgcgg ctgggcgttg aggatgcgat 9240
tcccggcaga ggacctcacc gggctcaccg acggcgccag ggccggcgttc accgcggcgc 9300
gggccgaggc gctgtggcgt cacggccagc tcgtcgggtc cacttccgga taccgcgatc 9360
cccgggtcca gcagcggatg ttcgaggagg aggtgcgccg ctcagggtcc gtggccgccg 9420
cacggatgtt cgtggcgccg ccggccgagt ccaaccacgt caagggcatg gcgctggacg 9480
tacgcccga cgagggcgcg cgctggctgg aggcgcacgg cggccgctac gacctctacc 9540
gcatctacga caacgagtgg tggcacttcg aacaccgcc gccagtgcgt ggcacgccac 9600
cacggcggct accccaccca ggccggcct gggcgagccg gaacgggggc cgggtctagc 9660

tagggcacgg ggtcgccgcg gggatcggtc cccggccggc ttcggcgcta gggcagctcg 9720
atgcgggccgc tccgctgata ccagtgcgag cccggccagca aatgggtgac gaccgccttc 9780
tccagcgctcg agcgctgcgg aagctcctcc agcggttggc cgttgtagcg gaagacgaac 9840
tccaggatcg cgtcgcccc gtcccgcggt tcggagtcga ggagcgcca gccgcgtctg 9900
agctgcagga tgtgggagtc ctccggcaga tactcgcca gctgcggatc gagcagccac 9960
gaggtgcctg tcgcccggcg ggcggcggtc tcgggaaaat gccgttcgaa gaacggggcg 10020
gcacgacgga gcgagtcgta atagatgtcg gggatcagcg gccgcccac ttcggggatg 10080
tgcaggccga ggacggggcg gccgtccttg gcgacggcca ggttgtagtg gagccggccg 10140
agccggtaga ccaggccgcg cagcagcagg gtgagccacc acggcatgtt cgtgccgccc 10200
tcgccgtact tgcggcgatg gatggccacc gattcccca gctgcgtcag ggtctcccag 10260
gtggtcgcct cggggatgtc ccgtgtcgcg tggaagcgcc gcaacggcg aagcgtcgcg 10320
aggaagacgt acacgtggaa gtagcggcg gcggcccg tctcgtagcg cagggtcggc 10380
ccaccccgta ccttcacctt gtagtcgccc atgtgccgga cgagctcgtg gtgggcgctg 10440
tcgagcagcc accacagggc cgggtcgca tccggggcg gggtgggcg cagcatctcc 10500
tcgacgtcgg gagccggcac ctccagccgg tgtaagagat cagcagctc atcgccctga 10560
ggcaggcgca ccggctcggg gggcggtccg agctcctcga gccgggagag ccacgccgtg 10620
gcgttctctc ccagccgag ctgcctgcgc acgtctcag catccatcgt cactccgttc 10680
tgttccgccc ggccccggcg gccgtgtcga gcaggagttt cgcggccacg gccgccccgt 10740
cggcgcgat cttcccggc acgtcgatcg cccgcgcgcg ggtctcggga gccagcgccg 10800
tggtgagcg gcccgacagg ctctccacgg tcggcaccg cccgtcgtgt gccacgccga 10860
tgcccagctc ggccaccgg cggcggtgt acggtgtgt ggtcatctgg ggcaccacga 10920
cctggggagc gcccgcccg gtgaccgcg tcgtgatgcc cgcgtgccg gcgtggacga 10980
cggcgccac ccggccgaac aacacctgt ggttcacct gccgacggtc aggcagtcgc 11040
tccggtcgtc gggcggggt aggcggccc agccacggga gacgatcacc cgggtggcat 11100
gggcccgat cgctcgatg gccaccctcg cggcgctcgt gggggcgggc ccgctgccga 11160
actccacgtg caccggtggc gggccggcct ccaggaacgc ctccacctcg gcgggcaggg 11220
gccgttcgtc gggcatgat cagcaccgg tctgcacgac gtcgaggtcc gtccgctgca 11280
gcggggccag gaccgggtcc gcggccagga agggcgatc ggtgtagcc tagctgaaga 11340
tgtcgtccac cggcggcagg ccgatcgagg cccgcccgt gttgagcgcg gcaccgaacc 11400
gctggtaggc gccctggtt ttgcgggtccc acagcaccg gttgtcggtc acgtcccgcg 11460
cgggctgctc accgaggggt ggcggcgcg ggtagtacgg cgacggcaca tagatggggc 11520
agtagaagac gtagacgtag gggatgccga gcttctcggc caccgaccg acggcgaccg 11580

ccgccgacag cagccgctc accaccatca cctcgacccc ctccggcgcc ggcaggacct 11640
ggtcgagctg cgtggcgatg gcctcggcgt cgagccgggg cagtcctcg agcgagggcg 11700
gcctcttccc gtgcagcttc gcgcgcacgc aggtgccgac cggcaccagc ggcaccccgg 11760
cctcggccag tctctccgcg cagtccggcg gggcgacat ccgtgtctcc gcgcctagct 11820
cacgcagctg gaccgccagg ccagcagcg gttcgacgtc cccgcgtgat ccggacgtcg 11880
acaacaacac gcgcagctc tatccctgtt ccgtggattc tggcgcgat cgatcggaag 11940
gccggagcct caggggtgat gtgtcagcca tctcatccc tccgggtgagg tcaccagccc 12000
gccggggaac agtggctgct cgggctcggc gtccgcaccg agcaccgccc tcatctgctc 12060
ctgcccgcgc tectgcatca cctgtttgac cacctgtgac ttgaacagcg gcaccatgct 12120
ggagtcgtcg ccgtcggcca tctgatcgac ggcgcggcg aactcggcg tgcgtcggc 12180
gatccgcctt gaggtcgcca gcgcgtctc gccggaggac agaccgccc ccaggtccac 12240
gaacgactcc agctcgggtg actccttgtt gttggtgacc ttcttggcgt gccagaaata 12300
cgactcctcg ttcacgttca tctcgtagaa cgcagcagg aactcgtagt acacgctgta 12360
ctcgcggcga tatcgcgctt cgaactcatg cagcgcgac ttctcctcga cgtcaccggc 12420
caggacgtcg ttgatcgacc gggccgccag gaggcgctg taggtggcca ggtgcacccc 12480
ggaggagaac accgggtcca cgaagcacgc ggcacgccc accaggatca tcccgggccc 12540
ccagaacttc gtctgggtgg aggagtagtc cttgcggacc cgcagctgcc cgtacttgcc 12600
ggtcgtcacc cggcgcgccg gcgcgaggta ctccgagatc agcgggact cggcgatcag 12660
cgcggccagc gccttctccc gatcgccctg gatcttctcc gccatctccc ggcgcaccac 12720
cgcgcccacg ctggtcagcg tgtcgctcag cgggatgtac cagaaccagc cgctgtcgaa 12780
ggccacgctc aggatgttgc ccgagtacgg ctccgccagc cgcttgccgc cctcgaagta 12840
accgaacagc gccaggctgc ggaagaactc cgaatagttc cgcgtgccac cgacgctgga 12900
atacaaccgg ctcttgttgc ccgacgcgtc gatcacgaaa cgcgcggaca ccgcgtgctc 12960
gccgcgtca ggatcgacgt aacgcaggcc ggtgaccga tcgccgtcct cgatcacctc 13020
ggtgaccgag catccctcac gcaccaccac gcccttgctt ctggcggttgc cgagcaggat 13080
ctcgtcgaag cgtgcccgtt ccacctggta ggcgaaagtc gtcggaccgc tgatccgcgg 13140
agagacggag aaggagaacg tccacggctc cggccgcgcc cccaccgga aggtgcccc 13200
gcgcttcacg ggaaacccc cgcgcgcgag ctcgctccgc accccgagca tccggcacac 13260
cccgtgcacg gtcgagggca gcaacgactc gccgatctga taccgcggaa agacttcctt 13320
ctccaccagc agcaccgat gaccctgat gccaccagt gtcgccacgg tcgaaccgcc 13380
agggccgccc cggcgacca ccacatcgaa ctcttccacg gacttctcct ttttcgttgt 13440
ggtcatgcga agtcgcccgg catttcggcc gcaggccgt accagggtgac cggcaactcg 13500

tccgggcaat cgatgaacgc gttacggaac ttcacttcct cggcggacac cgccaggcgc 13560
agcccgggaa accggcgcca caaactctga tacgccatgc gcagcagcgt cctggctatc 13620
gccgcgccta tgcagtaatg gatgccgtgc ccgaaccgga cgtgcgagcc gcagtcacgg 13680
cgcacgtcga ggacgttggc attcggcgtc agcgcctcgt cgcgattcgc catcagaatc 13740
gagcacagga cgtaatcccc ggccttgatc agctggcgt cgacgaccac gtcccggacg 13800
gcgagccgtg gattcggctg ctgcacgggc gacaggaacc gcagcagctc accgaccacc 13860
cggtcggcct cctcgcgtcc ggcgaagaga gactgtcgt ggtcgggatg atccagcagc 13920
gcgagaacct cgaagccgat cgaccccgcg acggtttcga caccaccag gatcagcgcc 13980
gtgagtacgc ccttcagctc ctgcgtccgtg acatcgtctc cgtgctcccg caccagcatc 14040
ccgatgaacc cctcgtcagg gtccttcgc tgccggatga tgaggccgtt cagataccgg 14100
ttgaacgccg cgctgtcggc cgcccgggcc ttgaaccgc ggctgagatc gacgttctgc 14160
ctgacacgcc ggatgaactc gatccgatca tcacgcggga tgccgagcag ctcacacagc 14220
actcctccgc cgaccggatc ggcgaacagc gcctggacgt ccgcggggcg ccccgcggcc 14280
tccagctcgt cgatgcggtc atcgatgagg tcctgcatgg cgggctccag ccggcggatc 14340
cggcggggcg tgaactccgg ggtcagcatc ccgcgcagcc gcgtgtgctc gggcggatca 14400
tagaccgaca gctgaccgac cagattcggc ggtatgggct ctccggcgat cgatggcgcc 14460
gaactccacc gggggcgcggt cgtgaagttc tcgtgatcgc cgagtattct gcgcacgacg 14520
tcgtatccca aagcctgcc aacatagtcg acacgcagct gagtggccgc gtcaccgcct 14580
atccggacca gtgggcatg cgccctgagc gcgaacatgt cctcatgcgg atcacagtgc 14640
gtccgcatca tgtagttcgc cgctcggctgc aggaccggcg cgcccgcatc gatatcgtca 14700
tccatacccg ggtcgaaact ccattcgtg tcgatccgca cgctcggctg atccgatact 14760
ggtcgcgggc ggaagatatt tccagcgtcg tcaaattggac gatgggaacg ggaattccgc 14820
gatcaccagg cgaccatcag actggtcaat ccatacgcg gagtgggtcaa ccggaacgat 14880
ggctcccgat cgggatccgc gagcctcagc gtgggaaaac gccgccacag ggcgggtgtag 14940
accgtgcgca gttcgaggcg ggccagagcg gctcccaggc aatgatggac gccgtgcccg 15000
aacgcgacat gggggacggg ctgcgcgccg acatcgaggc ggccggcatc cggcagcagg 15060
gcagggtcac ggttggccat gggcagagag caggagacgg tctctccctc cttgatcacc 15120
tggtccccga tggtgacgtc ctccatggcg acccgggggcg tcggcgcata ggggacggtc 15180
aggtagcgga tcagctcgtc gaccgcccga tccgcccact ggtcgtcgc ctgcaacgcg 15240
gcgatctgct cggggtgtct gagcagggcc agcacgccga gcccgatcat gccggagatg 15300
ttgtcgtcgc cggccagcat cacctgaacg cagaagcccc gcagctcctc gtccgtggcc 15360
gtgtcaccgt actcggcgag gacggctccg agcagcccct cgccgggatc cttccgctcc 15420

ctggcgatca tggccagcag gtagcgggag aacgccgcgc cggcggccgc ccgcctcttc 15480
tggctgcgcg aggcgtcgag atggccgtga cacagctgca tgaacatggc gcggtcgtcc 15540
cgtggcacc ccatcagctc gcacagcacg gccctggca cctcgtcggc gacgagttcg 15600
accagatccg cagggggggc cggccgttcc agggcgtcga gccgttcggc cacgatctgt 15660
tcgatgtacg gcttcagccg ccggatccgg cgcagggtga atcccggggc cagcttctgg 15720
cggagccgcg tgtgctcagg cgggtcgtag tccatcaggt tcccagaccg ctcacgcggc 15780
cggaagttgc ctcttcgcgc gatctcgtcc cgttcgttcc agcggcgccg ggtgctgaac 15840
cgccggtgat cgccgagcac ctgccgcacg acggtgtacc ccgtggccag ccaggtggtc 15900
tccgctccg ctctgatcc gatggtgatc ctcgtcagcg ttccggcggc gcgcagttcg 15960
tccgccggat ccaggtcctg ccgccgagta tggagggggc gcgcgccgtc accactcaac 16020
gggaagctcc tccacggcga agggggccgg ctccccggc ttgaaccgca ggtcctctgc 16080
cgggaccgcc agccgcagcg acgggaaccg gcggaccaac gccggcaacg ccacttgccg 16140
ctggagcctg gccagcggcg ccccgaggca gaagtggacg ccgtgccga acgcgaggtg 16200
ttcgggggtg ccccggtga ggtcgaagcg gtctcgcgc gcacgattgc ccgccaggat 16260
cgagcaggtc aggacatcac cggcgtggat gtcccgtccg gccaggcgcg tgtcgaccag 16320
tgcggtccg ggagaggggg tctcgacgat cgacgcgtag cggaacacct cctcggccgc 16380
gctgtccgcg agctccggac gctcgcgcag cagcgcctc tggtcggggc gggtcacgag 16440
gaggagcacc gcgatcgcca gctgcgaggc catctgctcg accgccccga tcatgatccc 16500
ctcgacgagc cccgccagct cctcgtcggc gacctgcct ccgtgctcgc gcacgatgcc 16560
gccgatcatc ccggtgccg gatcgaggcg ttcgcgagcc gccagtttcc tggcgtagtc 16620
gacgatgcc aggcccgaca cgttcgcgtg cctggggact cggctctccc ggtgtccccg 16680
gaacatcctc gacagctcgg cctgggtcgtc acgggggacg ccgaggaagt cgcaggcgat 16740
cagcgcggg atgggcccag cggcgttcct gacgaagtcg accggcgacc ccatgctctc 16800
cagatcggcc aagcagtcct cgacggtctc ttcgacgaca ggccgcaggc tctcgatccg 16860
ccgggcgggtg ttcgccctgg tcacggtcct gcgcaaccgg gtgtgatcgg gcgcgtcgta 16920
cgactgcagg attcccggca gccaggcgcg ctccgcctcg tctcgaccg ggcgcacga 16980
gctgaaccgg ttggcgtcgg cgagaatctc tctgatctcg ccatatccgg tgacgagcca 17040
ctgcttgtgg ccgtccagcc ccggctcggc gtcgtactcg tgcagcgcc cgtcctcttg 17100
caggtcgaag agcgcggca cgggatcgag cctcagccgc tgatgcggca gcggaaccac 17160
catgattctc ctcagcttcc ggcgttacca gtcgagcagc agtgctttca cgtcgaacgg 17220
cggcggcccc aatctgatct cttgttcggg ctcggccagc cggagtgcgg ggaagcggcg 17280

tgccagagcc gggatcgccg accggaagat gagctcgcc aggggtctgc caagacagtg 17340
atggatgccc tgcccgaacg cgacattcgg cgctctgtcg cgggtgaggt cgaactgata 17400
gtccgggccc gggaagtgcc gccgggtcgc tcccagcaac gagcacgtga cgggtgtcgc 17460
ggccttgacg atgcggtcac cgatgcgcac gtcctccagc gcgatccgcg gaggagctt 17520
ctcgtcgatg gtgagatagc gcaccatctc ctccagccag tcaggcacga cgtccggctt 17580
gtcccgaagc agcgcgaaact gctcggggac ctccggccatc agccacgcgc ccgcccgcgag 17640
gaaacgagcc acctggtcac cgcccgcgc catgacgaac gcggccagcc ccgtcagctc 17700
cgcgtcggtg atctcgtcac cgtgttcgcg caccacgacg ctgagcatgt cgtcgccggg 17760
atcacggcgc gtgcgagcca cgacctggcc catgtaggtc atgaacttgt tcccggcggc 17820
tccgcgtctg ctggccgccc gctgggaccg gctggcgtgc aggtgcgtg acagctccgc 17880
ctgatcatca cgtggaatgc cgaggaagtc gcaggtcgcc gtcgtcgca tggaccaccc 17940
gaaatgcggg acgaagtcca gcgggcccacc gatggactcg atggcgtcca ggcagtcctc 18000
gacgacctga tcgacctgcg ggccgaaccg ctccatccgc cggacggtga acgcgggcga 18060
gaccaccggc cgcagtcgcg tgtgctccgg cgggtcgtac tgggtgatga agccgggaaa 18120
gacgattccg gccgcggtcc cgccgtagag caacctggag ctgaacttgt ccgagcccag 18180
cacctgccgg acctcgtcga acccggtggc gagccacgcg gtccgcctc cagggcctc 18240
ctcggcgcgc agctcggtca tcgggcccctc ggccatgaag gaccgcagct gtggcaccgg 18300
atcgaaccgg tccctccagt gcagctcccc gggcaggacg acgttgagct cctcgaacac 18360
ttccacgtca caggtccttc cgctcaacg gtggtctcag gccggtcga cgggcgctgg 18420
gcccgctcaa ccgtccacat caagcggctg gacacctcg ctccggcgc ggcttccgcg 18480
atgagactct tcggccggat gtccgtccag ttctcctcga cgtaggcgag gcattcctgg 18540
cgggtggcca cgccgtggac gcgggtccag ccaggcggca cctccgcgaa cgagggccag 18600
agcgagtgtc gtccttcgtc gttgacgagc acgaggaagg agccgtcttc gttctcgaac 18660
gggttggtca tcgctgtgtc ctttcaccgt ccggccgggg ccggagtctc tcggcgacga 18720
cggccccgat ccgggcccag gccgcgggct gcagcatctg catgtggctg atctcgatct 18780
cgtgaggctc gacgggtccg gtggtgaggg gtcgccagct ggcgatggcg tccgcgacgg 18840
gcagatggga ggggcgggtc actgtggcga cgaagagcag gatgtcgag ccgaagctgc 18900
gggaggtgtg cagcggcccc acccgggcga ggtgctccat gacctcgtcc aggcgcttc 18960
tggcgcgggc ctccgtggcc accgcggcgg cgagctgcgc ctgctgctcc tgctgcctgt 19020
cgaagtccgc ggcctcctga tcggccgcgt cgccgcgcgg gcgccggagc ctgcccacgt 19080
cggtgggata ggcgtcgagc agggcgagca ggccgacctg ctccccttgc tctccagca 19140
ccctggccat ctctgcgcg atccgcccgc ccagtgacca cccgaggagg tggtagggc 19200

cggtcggctg cacggcgcg atctgctcga cgtaatcggc cgccatctcc tcgacgccgg 19260
ccgccagcgg ctccgtacga gccaggccgc gcgcctgcac gccgtagacc ggctggttgg 19320
ggggcaggct ccgcagcagg ggcgcgtagt tccagctcag ccctccgctc gcatggacgc 19380
agtacagcgg cggacggtta ccgccggctc gcagcggcag cagcacctcg aagtcgcccc 19440
tgccgggtctt caccgagccg ctcgatcccc gccgctcgcc gacgacgacc aggggtgcccc 19500
cggctgtcca gcgggagcgc agggccgtgg gcagcatgcg ccgccccgtg gccccgaagg 19560
ggcaggccag ggtccggctc cccggctccg cgtccacgc cgcgccgggtg aggtagagct 19620
cgccgacggc gacggcgggg cgcagccggc cgtcgagcac gagcgcgccg agcggaccgc 19680
cctcggccag gtcggcgccc accgggggca cggcctcgga ccacttcgcc ggcgcctcgg 19740
ccggacgttc gcgttcggcg tcgtccagca ggacgtccag gtcgctgacg cgccgctggg 19800
gatcctccgc cacctgctcc aggaagctga ccagccgccg tgccagcgac tcggccgtgg 19860
cctgatcgaa gaggtcggcg gcatagtggg ggggtgccctc gatgccgtcc tcgtcgcggc 19920
gctcgggtgag cctgaacgcc agatccagct cgatggcctc cggcccgcac ggttcgacgc 19980
tggtgcgag ggccggcagc tccgtcgct cccacgcgc gaggtccctc tcgtgcacct 20040
ccaacccac ctggaacacg ggatggcggg agagcgagac cggcaggctc agcagctcga 20100
cgatcctggc gaagggcacg tccaggtgct ggcgcgcgga ccggatcgcc tcctgcgccc 20160
gggtgacgac ctccaggaag gtgggggtcgc ccgagaggtc cgtgcgcagg gcgagcggcc 20220
gggcgaaggg cccgatcatc ggctccaggt cgatgaggtc gtcgtcccgt ggcagcttcg 20280
tgccgatcac caggctcgtg cccgccccga gcctgggtcag cagcatggcg agcgcgccat 20340
gcacgatctg gaacgggtgc gcgccgatcg ggtccaccgc ctccaccagc ctggcggtgcg 20400
ggccggcgctc cagtcgcaac gacaccgtgc cggcccgcgc cgacgcgacg gccgaccggg 20460
ggcggtcgaa cgggagcacc gtctccccgt ggatgccgc cagattgtcg cgccagaaca 20520
ccagctgctc gttgatcagg ccgtccgcac cgcgctcgcc ttcgagcagg cgccgctccc 20580
agatcgcgta gtcggcgaac tgcagtgta ggggcgccc ctccgggtgcc cggccggcac 20640
gccgcgcgc gtacgccgc gacaggtccc ggaggaacac atccagcgac tcgtcatcgg 20700
cgaggatccg gtgcaccatc aggtgcagga cgtgttcccc gtcggagagc cggaacaggt 20760
caccgcgcca cggcacctcc cgggtgaggt cgaagaccga ctcccgcagc tcggtgagca 20820
gcccgggcag gctctcctcg gtggcgggaa ccggcgctcag gtcaaccggc gaggcgtcgt 20880
gtacgtgctg gtgaacgctc tgcgcgtggc cggggaaggt cgtccggaga atctcgtgcc 20940
gcgccgcgac gtcgccgagc gccgcctcca gcgcgggcac gtccagccgg ccgcgcaagc 21000
gcagcgcgac cgagacgtgc aggcggcgcg cctccccggg actcgccagc agccaggcgc 21060
tgagctgctg ggcggtgagc ggtaccggc ccggccgttc ggcgggctcc agcgcggggc 21120

gtgacttcgc ggccagcgcc cgggcgacac ccgcgggggt ggccgcggag aacagctgcc 21180
ggatgggcag gtccgcaccg agtcctcac ggatccgcgc gatgagccgc atggccagtg 21240
ccgaactgcc gccgagatca tggaaggcgt cgtcgacgcc cacccggtcg acgccgagga 21300
tctcggcgaa gagcgcgcac agcaccttct cgggtctcgt ctctgtgcc ctgtccggcg 21360
cacgtcccac gagatcgggg gcgggcagag ccaggcgatc caccttgccg ttgggcgtga 21420
caggcagcgc gggcagggcg acgaccgcca ggggaaccat gtacgcgggc aggaccaggg 21480
ccatctcccg ccggatctcc gccggccccg catcggttcc gtcggagatg aagtagccga 21540
ccaggcgctt ctgcgccggc tggctctccc gcgccacgac gaccgcctcg accacgccgc 21600
gctgggcccgc cagcacggcc tccacctcgc cgagctccac ccggtagccg cggatcttca 21660
cctggtcgtc ggtgcggccg aggaacacca cctcgccgtc gcggttccag cgcgccaggc 21720
cgccggtgcg gtacatgcgc tcaccaggag aagggtccac ggaggccgga acggccacga 21780
accgctctgc cgtcaggccc ggcccgcga gataccgcg ggccagcccg gtgcccgcga 21840
tgtacagctc gcccgccacc cccggcgcgga ccgggcgcag gaaggcgtcc aggatgtaga 21900
tcctgcgggtt ggtcatggga cggccgatcg gcagctcccg cccgacctcc tcgccgggct 21960
cgatcggctt ccacgtcgcg cacagggtgg tctcggtcgg tccgtacgtg ttgcgcaccc 22020
gcaggccggg cacggcccgc cgcagggtgct ccacggactg cgccggaacc acgtcaccac 22080
cggctcccgc ctcgaccagg cccgcgaaac actccgggga cgactccgcg agggcccggga 22140
aggtaccggc ggtgagatgg acgaaggcca cgcgccgttc gacggcctgt ctcatcccga 22200
gcgcgtccag cactcccggc tcggtgagca cgaccggcc acccatggcg agcggcaccc 22260
acatcgcgta gagcgaaggg tcgaagacgt gcgtcgcgtg catcagcacg gcgtcggccc 22320
ggccgatccg ccagccctcg tcgcccgcca ggccggccac ggccccatgg gggacgcccga 22380
cccccttcgg caggccggtg gagccggagg tgtacatcac gtacgccagg tcgtcggcgc 22440
tcagccggat ctgcggcgcc gtggcggcac ccgcgtcgat ggccgcgcgg gtctccgggg 22500
cgtcgatgac gatcgcgtcc gccggcgcca cttccctggc ggcccgggtg cacaggacgg 22560
ccgagacacc ggagtcggcg agcacgaact cgatccgctc ggccgggtgc tcgacgtcca 22620
ccgggacgta cgcggcgccc gccttccagc tcgccaggaa cgcgatcagc aggtcaggcg 22680
acctgtccat gaccacgccg acgcggtcgc cacggccgat gccacgagcg gcgaggcggc 22740
gggccagccg gttcggcgcc tggtcgacct cggcgtaggt caggctccgc ccgccggcat 22800
cggtgatcgc caccgcgtcc ggcgccgtgg ccaccgcgcg tccgaagaga tcgagcacgg 22860
actgccccgg cgtggggccc gccgtcgcgt tcagtcctc caccaccagg gcgcgtcgg 22920
cttcgctcag cagcgtcagc cggccgacga ggacgtcggg ctccggcgacc agccgctcaa 22980
gcacgcgagc cagcgcgccc acgaccgatt cggcgggccc ctcgtcgaag aggccgcggc 23040

cgtagtcgag gatgagcggc atctgcgcgc cgggcccggt gatcaggggtg aacgggtagt 23100
gcgaggagtt gcgtccgcgc cgcaccggtc tcagggtccag gccgccgtcc tcttcggccc 23160
ggccgagttc ctggcgcggg aagttctcgt agatgacgag cgtgtcgaag accgccccgg 23220
gcccgaacggc ggcctgcata tcctgcaggc cgagatgctg gtgcgccatg agtgccgact 23280
ggctgcgctg cagctcggcg agcagctcga cgaccgcgcg gccgccttcg agccggaccc 23340
gtaccggcag ggtgccgagc agctgcccga ccatcgactc cacaccggcc agctcggcgg 23400
gccgccccga ggcggtcgcg ccgaacacca cgtcgggtgcg gccggcgagc tgcgccagga 23460
ccatggccca cgcaccctgg acgacgggtgt tcaagggtgag gccgtggccg cgcgccagcc 23520
gcgccagccc gtccgtcagc tccgcggaga gctcgatac cgcgggtgcc atgtccggca 23580
cgcggggccg atcggccggg gcgaccagcg tgggcgtgtc cagtccggcg agtcctgcc 23640
gccaggccgc ccgggccgc tcttgtcct gccggcccag ccaggcgagg tagtcccgg 23700
aggacacggc ggcaggcagc ccggacgcgt cgcgccgcgc cgcgtagatc gcggccagct 23760
cgcgggtcag gatcggcata gaccagccgt ccagcaggac atgggtcagg gtgtgcacga 23820
gccgggtggct ggccggggcc agccggatga ggtgcagctt catcagcggg gccgcatacga 23880
gggggagccg ctcggccagc tcgtccgcgc ccagccggtc cacctcgtc tgcaggaggt 23940
cgtccggcag ccgtggaga tccgtttcac gccaggggat ctccgcctcc cgcgcgatga 24000
cctgcacat ctgcgcgcgc ctgacatagc ggaaataggc ccgcagcgcg gcatgccgg 24060
ccacgagcgc ctgccacgac gccctcagcc gcccggcgtc cagcggggcc tcatgccgt 24120
acacgggtctg caccgtgtag gtgtcgggcc cgtcgtcgtc gagggcggtg tgatagagca 24180
tgccctcctg cagcggcgag aggggcccaga cgtcttcac gctggagcgc ggcttcgcac 24240
gagtgtcgtc aatggtcacg atctgctcct tatggagtca tccgccggcc ggtccggcct 24300
cgagttggtc cagctgatca ggcgaaagat ccacgagtgt gccggccggg ggctccgggt 24360
ccccggtgcc ctcgccgtcg gccgggagct ccttgacgac cgccgccagc cgttccgcgc 24420
tcttctcgtc gaacacctgc cacgggggtga ggtccagccc ctccggcgcc gccagggccg 24480
acagctgcat cgaggatgac gagtcgccgc cgagctcgaa gaagctgtcg ccggcgccca 24540
cctcctccag gccgagcacc tccgcgaaca gctcgcacaa ctccgcctcc atggccgagc 24600
gcgggtcgcg tcctgacgac gacctcgcga aatcgggggc ccgcagcgc cgatgatcga 24660
ccttgccgtt cggggtcagg ggcatacgtgt ccagcgggac gaacgccgc ggctcatgt 24720
gctccggcag gcgtccggcc gcgctctcgc ggagggcgga gatcaacgc ccgtcctgcc 24780
cggcctcgga gggagcgcc gccacctgct cggccgcggg gacgacatac gccaccaggt 24840
acttctggcc cggaccgtcc tcgcgggcga cgaccgccac ctgggcgacc ccgggatgt 24900

ccgccagcac ggcctcgatc tcacccgggt cgatccgata gccgcgcacc ttgacctgcg 24960
cgtcggcccc gccggtgaag accagctcac cgtcccgggt ccagcgggcc cggttgccgg 25020
tgcggtacat gcgctcacca ggacgggcag ggctcaccga ggccggcacc gcgacgaacc 25080
gctccgctgt caggccccga cggccgaggt agccgcgggc gagccccggc cccgccacat 25140
agagctcgcc ggtcacacct ggccggcacgg gctgcaggaa ggcgctcgagc acataggctc 25200
gcaggccgggt gatcgggccgg ccgatgggca ccacgtcgcg tcccggagac agcggggagc 25260
tcacgtcgcg gcagacggtc gtctcggtgg gcccgtaggc gttgatcatc cggcggcccc 25320
gcgaccagcg gtccaccagc gcgggcgggc aggcctcgcc ggccacgacc agggctctcca 25380
ggctgtccgg caggctcgcc tcgacggccg gcacgctcgg cggcacggtc acgtgggtga 25440
tgccccaccg gcgtaccgcg tcgcccagcg acacccgggg cggcatgctc tccgcgtcgg 25500
ccagcaccac ggtcccgcgc gacaacaggg ccatgcacag ctcggagacg gcggcgtcga 25560
agccgagagc ggcgaactgc aggatccgcg aggcggacgt gacgccgaag cgctcgatct 25620
gcgcgctcgc cagattgccg agcccggcat gggggacgag gactcccttg ggcacgcccc 25680
tcgaccccga ggtgtagatc acatacgccc cgtcaccgcg ctccaccggg ggcagcgcag 25740
tgcgcggatc ggcggcgagc ggcgcgcca gcgccaccac cgcgcccgcg aactcctccg 25800
ggacggcctg cctggctctc ctcgtgcaca gcagcacctc cggcgcgga tccgccagga 25860
tgaagctgat gcgctcgcg gcgataatcg gatccatcgg gacgaacacc ccgcccgcg 25920
aggacacccc gagcagtgc accaccagct cggccgagcg tcccacgagc acgcccaccc 25980
gcgtctcacg gcgcacgccc agccccacca gcagccgcgc cagctcctcc gcctcgcca 26040
gcagtccgct gtacgacagg ctccggggcc cgtccaccac cgccaccgca tccggcgagc 26100
gctccacctg ccggcggaac agcatcggca ccggctccgc ggcgggcggc acgccgggtc 26160
tgttccactc ctccaccacc aggcggcgct gctcaggacc gatcaggccc acgcgcccga 26220
ccggcacgcg cggctcggcc accacctgt ccagtccccg gaggatcgac gcgagcatct 26280
cctcggcctc ggcccgatcg accacgtccg gccggtagat gaactcaccg tggacgcggc 26340
ccgccacgga cgcgcgcatg gacagcggat agtgccctgt gtcgttcggg atgcccgcgg 26400
gccgcatgac gagcgcgctc gggccttcgg gccgaggcgg cgggggcggg tagttctcga 26460
acaccacgat cgtgtcgaac gccgcgcccg gaccggcgag ctggttgatc tcgctcagcc 26520
ccacgtgctg gtgcggcatg cacgcgacct gccgttcctg aaggtctgtc agcatgtcga 26580
ggaacggctc cgcaccggcc aggcgagccc ggaccggcaa catgttcatg aacaggccga 26640
cggcggactc cacaccgggg atctcggggc ggcgcccggc caccgcggcg ccgaagacca 26700
cgtcgctcgc tccggtcagc cgggccaggt gcagtgccca gatcccctgg aagagcgtgt 26760
tcgcccgcac gccgtgacga ccggtgaact ccaccacgcg ccggctcagc gcctcgtcga 26820

gttcgaaccc gacacgttcg ggctccaggg gagtggatgat cgtctccggc ggcacgacgt 26880
gggtcgctc gtcgagcccc gccagctcgg ccgcccacgc ctctcggggc gccgccttgt 26940
cctggcgggc gatccaggcg agatagtcgc ggtacgacgt cgcggccgga agggcccggc 27000
cgtcaccgcc ggactcgtac acggtcagca cgtcctcggg gatcagcggc agggaccagc 27060
cgtcggccac gatgtgatgc gaggtcagga ccagccgggtg ccggcgttcg ccgaggcgca 27120
ccagggtcag ccgcagctgc ggcgcccggg tcaggtcgaa ccgctcgggtg tgcagctgct 27180
ccgcgaggcg gtcgaactcc gccagcgcct cgtcctcggg cagccgggac agatcgggtct 27240
cctgccagtc cagcggcacc tcgcgagcga tcgcctgcac ggccgcgccg gacccgagct 27300
ggtggaagct cgcgccgagg gcgggggtgcc ggtcgagcag agcctgccag gaggcgcgga 27360
accggggcag gtcgaacgga ccgtcgaggg cgagcttgcg catccccgcg tagacgtccg 27420
ggccgcgctc gtcggcggcg tggaacagca ggccctcctg gagcggagac agcggccaga 27480
tgtcgagcag ggtcggtagc gcggcctcga cctccgccac gtctgctgc gtcagcgaga 27540
tgagcgggaa gtccgacggc gtgtgcccgc cggcgccgc gccaccgacg tgtgccgcaa 27600
ggccggtcag catggccagc caggcctgcg cgagcgactc cgcctcggcc tcgccgagca 27660
gccgccccgc ccaggtcacg gtcaggctca gtcagggtcc tgccgcaccg tccagcacgg 27720
ccgcgtcgat ctccacggcg tgccgcaacg ccgtgtcctg ctccgccgtg ccgccgatgg 27780
tgcccagcag ctgccagggc tccggggcgc ccgcggaccg ggacgggaag cggccgaggt 27840
agttgaaccc gatctccggc ttccggcgccg ccgcgagagc ctgccccgtc ccggcgttga 27900
gatagcgag gatcccgtag ccgagcccgc cgtcggggcac ggcccgcacg ttctccttga 27960
cctgcttcag cagggtgaccg gccgcaccgc caccgcgat cacttcggcc ggatcgatcc 28020
ctgtcacatc cagccggagc ggatgcacgt cgggtgaacca gccgaccgtc cgcgacaggt 28080
ccagctcgtc gatgggcccg cggccgtgac cttcgacgtc caccacgacc gcggtgccgc 28140
cgcgccagtg ggccaccgcg cctgccagcg tcgccagcaa cacctcgtgg acaccgcagt 28200
ggaaggcgga ggtggcctgc tccacgagca cgcgcgccg gtcatgcggc agcgtccacg 28260
atgtgcgtcc cgcggtcgag acgggtgtgc gcgcggggtc gagctcgccc agccgcgatc 28320
gcgccccgtc gaggatctcc gtccacgtct ccagctccgt ggcccgtgtc accgcctgat 28380
cggccagcgt tcgcgccag cgcgggaacg agacgtcgac ggggtcgagc accggccgcc 28440
ggccggcggc cagggcttcg caggccacct gcagggtccg cagcaggatt cgccacgaca 28500
cgacgtccac cagagatgg tgccgcccca cgacgagccg tcccaccgc cctggccccg 28560
cgtccacca gaccgcccgg atcatcacgc cggcgtgggg atccagccgt gcggccgcgt 28620
cgcggggcga gcgatccgcg atctcatcca cgtcaccggt gccggcctcg accggttcga 28680
ccagcgtcgc cgcgtccacc gctccgcggc cggccacgac cagccggggc tgccgagccc 28740

cggcgcgac gatccggctg cgcagcatgt catgcgcgtc gatgaccgcg cccaatccgg 28800
ccgccagcac gtccaccgac aggtcgtcgg gcgcaccggc ggtcaccacac tgggacaggg 28860
cgccccgggt catcgcgtcg ggatcgcgtt cgagcagtgc ccggatcacc ggcgtcgaca 28920
tcacctcacc gacgcgcgtcg tcgaggctcg cccgcgtcgc accgccgcgt tcggcgacca 28980
tcgcgatccc ggcgggcgctc ttgcgctcga agacgtcctt cgcgccgaag acgagctcct 29040
cacgtcgcgc gcggggcgcc aaccgcatgg agaggatcga gtcgccgccc agctcgaaga 29100
agctgtcctc ggctccgggt cgcgccacgc ccaggacctc ggcgaacagt tcgcacaaca 29160
cccgtcggc ctcggtagcg ggctcccggc cggccgcctt cccggtgaac tcggggacgg 29220
gcagcgcggc acggtcgatc ttcccgttgg gcgtcagcgg gacgccgtcc agcagcacca 29280
ccgccgccgg caccatgaac tccggcagcc gtcccgcgag gtgctcgcgt accgcgtcgg 29340
gatccaggcc cgagccctcc tccgcggtca cgtaggcgat gagtctcttc tcgccgggac 29400
ggctctcccg cgccacgacg accgcctgcg cgacgtgcgg aacctcggcc agcgccgcct 29460
cgatctcccc tggctcgacg cggtagcccc ggatcttcac ctgggagtcg gcccgcccgg 29520
cgaacagcag ctgcctcgg tccgtccagc gcgccaggtc gccggtgcgg tacatccgct 29580
caccggaggc cgcgggggttc accgaagcgg gcaccgcgat gaaccgctcc gaggtcgccg 29640
cgggggcgcc caggtaaccg tgtgccaggc ccgcgccggc gaggtagagc tcaccggtga 29700
cgttcggcgc caccggctgg aggaaggcat ccaggacgta cacctgccgg ccggccagcg 29760
gacggccgat gggcaagggtg tcgcccgttt ccgtgtgcgg ctcgatgagg tgccagggtg 29820
cgcagagcgt gacctcgggtg gggccgtaca actcccggac ccggacctcc gggcatgccc 29880
ggcgcacccg tgcgacggac tcgagcggca ccacgtcccc gccggtgagg acctcgcgca 29940
gcccgctgaa ggagtcgggc gactcctccg ccagcacccg gaagggtcccc gccgtcagat 30000
ggacgggtggc cgcgccccgt gcgatcacgt cccgcagccg ctgcgcgtcg atcgcgcccg 30060
gttccgcgac catcacgcag gctccgctga ccagcggcac ccagatctcg agcagcgacg 30120
cgtcgaacgc gtgcgacgcg tgcataaca cgcggtcgcc ggcgccctgc gaccagcccg 30180
ggtcgccggc cagagccgcg gcgtcccat gcggcaccgc gacgcccttc ggcaccccgg 30240
tcgatccgga cgtgtacatc acgtaggcca cgtcatgcgc tccgaccgcg agcgggtggc 30300
cctcgtgccg ctccgcctcg gtcgcgggtg cgtccatgac caccggctcg atcccgtccg 30360
ggaccgcgtg ccgggtcgct cccgcgcaca ccgccaccga cgcgccggcg tcggccagca 30420
tccgctcgat gcgctccgcc gggtagtcca cgttcaccgg gacttgcgcg gccccgcct 30480
tccagaccgc gagcagggcg acgatcaggt ccgcgccgcg ttccatcagc acgccgacgc 30540
ggtcgccgcg ccgcacgccc ctcttgcca ggtgccccgc cagccgggtcc gattcccgggt 30600
cgaggccggc gtaggacagg gtgcgtccgt cgcgatgac cgcgctcgcg tccggcgccg 30660

cgctggcctg gcgccggaac agctccggca ccgatgaacc gccggccgcc gcaccggtcg 30720
agttccagcg ctccgtcacg gagccgcggg tggatcggct ggtcacggcc aggcggccga 30780
cgggaagcga gggctccgcc accatccggg ccaggaccgc cagacctgc ccggtgatct 30840
cggcggccag gtccccgccg atccagtcgg gccggtagtc cagctggatc tgcaggcgcg 30900
cgcccgggat gacgtcacg gacagcggat aggtggtgcc ggtccgcgtg cggatcgagc 30960
tgatcgccac gccaccgtcg tcgagaccgt cggcgtccag cgggtagttg acgatcatca 31020
ggatcgtgtc gaagatcgag cccggccccg ccgccttctg gatctccggc agccccaggt 31080
gctgatgtc cgtcaaggac gactggcgcc gctgcaggtc ctggagcagg tccagcaccg 31140
gaacagcccc gtcgaggcgc acccggaccg gaacggtgtt gatgaacatc cccaccatcc 31200
gctcgacatc cggcaacgcg tccgcggac gcccggaac gaccgtgccg aacaccacat 31260
ccgtccgtct cgccagccgc gccagcacca gggcccaggc gccctgcacg accgtgctca 31320
acgtcagccc atgaccacgg gcgaagccgg tgagggcgcg ggtcgctcc tcggacagcc 31380
attcggcatg cccgtccggc atcaccggcg ccttgccgcg gtcgaggccc accacggtcg 31440
gttcgtccag cccggcgagc tcggcccgcc acgcgatcg tgccgcgtcc tcgtcctgac 31500
ggctcagcca cgccacgtag tcccggtagg agggcggcgc cggcgagacc cgtccgtcgg 31560
cgtaggcggt cagcatctcg ccagcagga tcggcgtgga ccagccgtcc acgagcacat 31620
ggtgcgacgt caccacgagc cggtgccgcg ccgcaccgag acggatcagc agcaaccgca 31680
gcagcggcgc cctgctgacg tcgaaccgct ccgcctgatc cgccgcgagc aggcgttcca 31740
cctccgcgtc cggctcatcg agccgcgaca ggtccgcctc acgccacagg acctcggcct 31800
cgccacgac gacctgcacc gtctcgccgg atcccagctg gtggaagccc gtccggagcg 31860
tctcgtgccg gtcgatcacc gactgccacg ccgcgtgcag ccgttgcgcg tcgagcggcc 31920
cgtcgaggtc caggatccgc tgggtctggt agacgtcgac gccgtcctcg tcgaaggctc 31980
tctcgaagag gatgccctcc tggagcggcg acagtggcca gacgtccgtc aggcggggcg 32040
ccacggcctc cagttcgtcc acgtcccgtc gccgcacctc gaccagctcg aagtcggacg 32100
gtgtgtgtcc gcccgcgccg ggagtgtcgg cgagagcggc gaggccggcc agcgtgtcca 32160
gccacgcctc gccgagccgc tccaccgcgg cagggtcgag gtccctgccg tcgatggcga 32220
gtctcagccg ggggcccggc ggcggtgctc gaacgtccgc gccgacctc agggcgtggg 32280
actggacgag gtccggcccc gccgcctgtc cgccgagagc cccttcgcac acctgccacg 32340
cgggtgcctc ggaggcgacg ccggaccgtc cgagatagtt gaatccgatc tgggccgacg 32400
gcagctccgc cagccggggc ccggtttcgg ggttgaggta gcgcaacagc ccgtagccga 32460
gcccgtcgcc cggcaccgct cgcgcctgtt ccttcacggc cttcagcaac tccccggccg 32520

ccgcagctcc tggaccgaca ccggagacat cgaggcggac cggatgaacg ctggtgaacc 32580
agcccacggt acgcagcaga tcctctccgt cggcggcatg gcggccgtgg ccttccacgt 32640
ccaccaggat cccggcgtca gcaccgcgcc accgcgccac cgcacccgcc aggcccacca 32700
gcaggacgtc ctgaaccccg cagtggaagg ctgccggcac gcgcgccacc aggttgcgcg 32760
cttggggcatc ggacagtgtc cgcgaccacg acgcccactg cccgggggtgc cgctccagcg 32820
gcaggtcgcc gccttcgagc acgcccggccc aatggccggc ctccggccacg gtgctctcgc 32880
tgagcgctg cccggccagc cgcgcgcgcc attgccggta cgacgtcacc gcgggttcga 32940
ggacgggggt tccgccggag accgcctcgt cgtaggccgc ccgcagatcc gacagcagga 33000
tcgcccacga gaccgcgtcg acgaccagg gatgcaccac caaggccaac cggcccggct 33060
cggcgtcgcc cgcgtcgacc cacacggccc ggaccatgat cccttcggac gggtcacgcg 33120
tgcccgcgc cgtcctggcc tcgcgctcgg cgcgctcagc gaggttcccg tcccggccg 33180
ccaccgcgt caccaggccg gccgcgtcca cggcaccgg ctccggccacc atcagccgtc 33240
cgtcgggctc caccgcgtc cgtagcagat cgtgcacatc caggacggcc tgcaggcgcg 33300
tcaccagcgc gtccggggcg aagccggccg gggtgacgac gaccgcgcc tgcgcgaaac 33360
cggggcgcac cgcgtcatcg ccgagggcac gcatcacccg cgtcctcggg atctcgccca 33420
cgcccggctc cactgaggag gctcgcctcc ccggggcctg ttgagccagc gccgccagcc 33480
gctcgggctg gcgggtgctg aacacctgtc ggggggtcag cgggataccc tggcgccgcg 33540
cgcgggcggc gacctgcatc gacgagatcg agtccccgcc cagctcgaag aagctgtctg 33600
cgaccccgac ccgcccgcgc cccaggacct cggcgaacac tccgcacagg atccgctcgg 33660
cgtcgggtggc cggctcccgg tccaccgccc cggcagcgaa gtccggctcg ggcaggggccc 33720
ggcgggtccac ctttccgttg ccggtcagcg gcaacgcgtc cagcaccagc accgcggccg 33780
gaaccatgaa ctccggcagc gtcgcggcga gctgctcgcg tatccgcacc gggtcgaggt 33840
ccccccctgt ttccggcacc acgtaaccga tcaggcgctc tcccgcgcg gacaccacgg 33900
cctgaccgac acctggaagg ccggcgagga ccgcctcgat ctccggggc tccaccgggt 33960
accgcgggat ctacacctgg tcgtcggcac gcccggcgaa cgcagctca ccctgatccg 34020
tccagcgcgc caggctctccg gtccgggtaca tccgccacc gggcacgaac ggctcggcga 34080
cgaaccgctc ggccgtcaac gccgggcggc ccagatagcc ctgcgccacc ccggccccgg 34140
cgacgtacag ctgcgccgtc acccccgggg gcacggggccg caggaaacgcg tcgaggacat 34200
agaccgcgcg ccccgcgagc ggacgcccga tcggcagcac cggccccgtc ggctcggccg 34260
gctgcagcag ccaccatgtc gcacacagcg tggcctccgt cgggcccgtg agatgccgca 34320
cgcggacgtc cgggcacgcc cgcgcacccc gtccaccgc cgcgagcggc accgcgtccc 34380
caccggtcag cacctcgcgc agcccggcga ccgactccgg tgactcctcg gccagcacc 34440

ggaaggtccc cgccgtcagg tgagcgcagg tgacaccgcc ggccacgtac ccggccaggg 34500
cctcgccgtc caccgcgccc ggctcggcga gcacgacccg ggcgcccga acgagcggca 34560
cccacagctc gaacagcgag atgtcgaacg cgtgcgaggg gtgcatcagc acggcgtcct 34620
cgggccccag ccccatccc ggctcgccgg ccagcgccgc gacgttgccg tgcgagaccg 34680
cgacgccctt cggcctgccc gtcgatcccg acgtgtacat cacgtacgcg aggtcgtccg 34740
cgtgcgcacc cgcggagaga cgggcgtgct ccgccaccgc ccgcagcgtg tccgggtcgt 34800
ccaggacgat cggatcgagc ccgcccggcg gcacggcggc ctggcacgct cgctcgggtca 34860
ccactgccgc cggctccgcg tccgcgagca tgaactgcac gcgctccgcc gggtaggcgg 34920
gatccaccgg cacgaacgcc gctcccgct tccacaccgc cagcagcgtc gcgatcaggc 34980
cgggtgaccg gcccatcacc acggccacc gatccccgcg ccggacgcc ccggccgtca 35040
ggtagccggc gagcctctcc gcgtgctcgg ccagctcacc gaacgagacc gcccgcttcc 35100
cctcgacgac cgccaccgg tcacggccgc gctccacctg gcggtcgaag agatccggag 35160
ccagctcgcc cggcgccacg cggggtgcc cactccatgc gttcaccacc agcgcacgct 35220
cggccgcact cgtcacgtcg acctcggeca ccgtgaggtc gccgcgccc gccagctgcc 35280
gcagaatccc ggtgaatcgc tccaggatgg cgagcgcggc ttcccggtcg aagaggtccg 35340
tcacatggtc gagattgagc agcatcgact cgccggggac ggcgaccagc gtcagcggat 35400
aatgggcggc ttcccggccc tggctctattc gaatatcgaa ggctgccgcg gcatccgatg 35460
ggcgaagctc acggggaaag ttctggaaaa cgagcaaggt gtcgaagacg gcgcccggcg 35520
cggccgtcct ctgaatatcc gccaatccca tgtactgggtg ggggatgagc gccgactgcc 35580
gcttctgcaa atccgccagg aattcgatga ccggcgtcga accgctcagc cgcacgcgta 35640
cggggacggg gttgaggaac aaccccacca tcccctcgac gccgggcaga tccggcgggc 35700
gtgccgagac cgccgcaccg aacaccacgt ccgtccggcc cgcgagctgg gcgagcagca 35760
acgcccacgc gccctgcacc actgtgttca gcgtcagccc atgggtgcga gccagctcgc 35820
tcagggtcgc cgtgaggtcc tcgggcagct cgaccgtgat gttctccggc atggcgggcg 35880
cccggttcgc atcggcgggc gccaccagcg tcggctcctc gacaccccgc agctccgccg 35940
cccatgccga cagcgtgcgc tccttgtcct gccggtccag ccacaccagg taatcccggg 36000
acgacggcac cgcgggcagg tccagcgggc tcccgtcggc cgcgtacagc atcgacagct 36060
cgtcgagcat gatgggcatc gaccagccat ccatgatcgc gtggtggcag gtcacacca 36120
ggcgggtggc gtcgcggcg agacggatca gggtcagccg cagcaacggc gccttcgcga 36180
ggtcgaacct ccgcgtcctg tcctcctcgg ccaccgcgcg cacggcctcc tcggggtcgc 36240
tgagggtggga gaggtccacc acccgccacg gcagctccac ctgcctggcg atgagctgca 36300
ccgtctcacc tgatttgccg tgccgaaaac aagcccggag agcggcgtgc cgcgccagga 36360

gcgcctccca tgcggcacgc agtctgtccg cttccaccgg accgttcagg ttcaggatcc 36420
aatggcccac ataaaggccg ggccagtcgt cgtcataggt cgtgtggaag agcaaccctt 36480
gctggagtgg tgacagcggc cagaaatctt cgatccgcga ctgagccatg gatgaatatc 36540
tccttcaatc agcaaagcgg cccgagaggg aatcatccat tgatgggtct gaccggaaca 36600
atctgtccat ccgtgactgc cgtcaccgat ccgggtgggg tcgaaggagg ccgccgacgc 36660
ggaacgtggc ggcttgccgg cgagcaacat ggctacggcg cgccatccac agctggatgg 36720
cgcgccgtag ccaggttcac cgctcgatcg agcgcggcct cactcgaagg aaagccccgc 36780
ggccggcgtc acccggaacg cccggcgtgc cgggagaaca ctggccagga gccccgccag 36840
ggcggcgacg aggacgacga cggcgagcag tggccagggg acctgcatgg tggcgttgtc 36900
gagagcctgc ttcacgaagg tctcgtaacc gaccagggcg aaccgatgc cgatcacggt 36960
gccgagcacg gcggccacca gggagagcag cacggcctcg gcggccagca tccgccgcaa 37020
ctgcctgcga gtgagcccga gcgcgcgcag cagcgcgtgt tcgcgaacac gctcgagaac 37080
ggacaggccc aggggtgttg cgatcccga caggggcgat gccacggaga agccgagcag 37140
cgcgacgatg gccaggtga ggatcatcag cggcgcgttc tccgtctcac gggcctccag 37200
ctggtcgttc acgttcgccc cggccgcggc cgccaggtcg ccagctcac cgacgagccg 37260
cgtcgagtcg gcgtcggcgg atgcgcggat ccagacggca cgcggcgcgg cggagtcggt 37320
gagccgggccc agcgtctccg gcgcgacgac ggctgcagc cccagccgg tggcgagcga 37380
gacctgcagc acggcccgcg ggtcgccgac cgtgacctg acctgtcac cggcccgcag 37440
gcgcagctgg cggaatgcgg actcatcgag cctgagcac cctggctcca cccgggcgaa 37500
cgaccgccc tegtgggcca cccgtgggc atccggcgcg gtgaccaccg ggatcggctt 37560
gtcgaggccg gagaccgtgg cgacggcgcc gtccaccgcg atggcctgat ccaccccgga 37620
agtgccacgg accttgtcga ggaagtcggc ggagaacggc ttgccggtcg agaccagcgc 37680
ggcgtcgatg ggggtgctggc cgtcgagtct ctggttcagc gcctcggagg tgatggcgac 37740
gccggtcagg acggcggtga tcagggtgat accgaccagc agtgaggcgg cggtggtggc 37800
ggtcgggcgc ggggtgcgca cggcgttctt cgtcgcgagc cgccgatgg tgccgagccg 37860
cgtaccggtg atctccagca gacgggggat gagcaccggc ccgaacagga gcacgccggt 37920
gaacaacgaa ccgccgccgg ccagcatgag caccgtgctg tgccaagcca tcgccgacgc 37980
gagcaggacg agcccggcga tcaacatgaa gacgccgagc accagccgtg cccgccccgt 38040
ggctgtacgc gggtcggtcg cgggtgtcggg acgcagtgcc gccagcgggc tcacccgcac 38100
cacgcgccgg atcggcagcc aggcgcgcac cagggtggcc gtcagcccga tggcgagccc 38160
gcccagcagc cacggcgcgg gcggtgccgg ggccggcgtc ggggtgatcg gtgagagggt 38220

cttgatcagg gcgatgagcc cgtagccgag tccggcgccg accagcacgc cggccagcga 38280
cgacaggagg ccgacgacgg ccgcctcccg gcgtaccgaa ctcaccacct ggcggcgggt 38340
cgcaccgacg cagcgcaaca gggcgaagtc gcgcatgcgc tgggcccagca ggatggagaa 38400
gggtgttcgcg atgaccagga tcgagacgaa cacggcgatg ccggcgaaga gcagcagcag 38460
cagtgaccag gtgtccacgc cgttctggag ctgcgcgcgc cgggcccgcga tctcctgctc 38520
cggggctctgc accttcgcgg tctcggggcac cggaccgacc gcgcgcgcga ccgtcacctg 38580
gtagatgccg agggagggat ogtcggccca gcgcatgagc tgcggccagg tgacgtacac 38640
cgacgcctgc gccacaggag aaggcgcccc cagcatgccg accacgggtga agtcggctgc 38700
cgtggcacgc tcacctatcc ggatgcggtc gccgacggcg acgtcccagt tctggggcgc 38760
ccacaggtcc accacggcct cgcccttgcg ctcggggaaa cggcccaggg tgagctgctg 38820
ccagcgcagg tccttgact cggcgaccgg cccacgccc atctcggggg aggaccggtc 38880
acccgcgcgc accgtcagca tggccctgcc gagcggtgac gcgttcgcgc catgacgctc 38940
gacgagctcg aacgcatact cgttcgtcag cttggacacc acgtggtcgg agttgcggaa 39000
cggcgccccg aagccggcca tgatgccgct ctgcgccccg gaggtgagca cgccgacccc 39060
gacgacgaag gccacggcga cggtgaccgc gatcgccgcc gcgacgtacc tgcggacatg 39120
ggtgcgagc gacgcgagaa agacggtgcg catcaggcga tccgtccgct ttccagggtg 39180
accacgccgt cggcgtaggc cgcggcctca cgctcgtggg tgaccatcac gacggctctgg 39240
cccagctcgc ggggtggattt gtgcaggtag cccaggacct ccgccagggg ggtgctgtcg 39300
aggtttccgg tgggctcgtc ggcgaacagc agatccggcc cggtgatcag agcccgggcg 39360
atggccaccc gctgctgctg gccgcccggac atctcggagg gccggtggcc gagccggctc 39420
gccatgccga gggtttcggc gagcacgtgc acgcgctcgg tcgccgcgct gtcgatgcgc 39480
cggccgcccga gctcgagcgg gagcgtgatg ttctggaacg ccgtgagcat cggcagcagg 39540
ttgaaagact ggaacacgaa gccgatgtgc tcacggcgga agaccgtgag ctcgttgtcg 39600
tcgagtgate cgagatcggg gccggccacg gtgacagtgc catcgctcgc ctgatcgagc 39660
ccggccaggc agtgcataaa cgtggacttg cccgatccgc tcgaccccat gatcgcggtg 39720
aacttgccgc gcgggaggtc gaggtcgacg ccgcgcaggg catgcacgcg ggtttcaccc 39780
tggccgtaca ccttggtcag gtttcgcgcg ctggccgcca cggtttccag agcggctcgc 39840
tggccgggtca tatagaagca cccttcgatt gtgcttgctg acagtcggca tgcatagca 39900
gaaagccatc attgacggct tcatggcgct attcttcgcg ccaaggctgg tagtcgtgct 39960
ggtactccgc aaagcgccac ccatcgtaga cgagcagtcg gccgggcacc aacggttcca 40020
aattgaagca gggcgccgtg cggagtaata gtcaagactg tggatgccga gttccttggc 40080
gactgtggga agggtgcttg caccggacgg gcggcattcc ctggtcagcc cccgggtgct 40140

cgggccgctg gtccggcggtt ggcgtcgaag gaactgccgc cgtacctggg gtcgagcacg 40200
gatgcggacc acgtggcggg cgcggccagc atggccgcga cgccgatggt gagcccggcg 40260
ctgaccagcg aactacgacg gggcctgacc agccgcgcca gcgcgagcgc gacgacggcg 40320
accacgccga gcgcgaccgc gcccacatc gccacggca gaaaagtggg gtagaaggac 40380
cacaaccaga cggcccaggc gagttcggcc acgatcgcga gcggaaatat ccacgccatc 40440
ctgcctccgc tccgatacgc ccgccagaac attacaatgc cgattccgga caaagcggct 40500
accggcggcg cgagtacggc cacatatgcg ctgtgcggga tgacaaagac cgcgctgtag 40560
ggcagggcga aggtgagaag ccacacgccc cacatcacca ttccgccgcg tgccgggtcg 40620
gtacgctcgg cccggcgcca ccaccacagc ccgcacagca gagccatcag cgcgagcgga 40680
tacagccaac cggacgcgac gccgaggcgg ccgccgaaca gcttgcccca gccgccccca 40740
tgctcgatgc ctatctcggg gatgaccatg ccagggcgtg gccggggcag ctgcgtcgat 40800
ctcttcggag gcgccgggccc gatcaccgag cccatgtagt tgggcggcag ggcgccgggc 40860
agattgatgc ccagggcgtc gagaccgttg taccgaaca ccacgcggc ggcgctgctg 40920
ttcgtggtgc cgctgatgta gggccggtcg gcggccggag tgacgtggta gagcgtgatc 40980
cacgacagcg acaccacgag cgtcaccact ccggcgatcc ccaggtgctg cagccgacgg 41040
cgcagtccga tcggcgcgct caggagataa ccgatcgcca gggcgggcag gatcatccac 41100
gcctgcaaca tcttcgcctg gaaaccacgc ccgaccaga cgccggccca gaccagcgac 41160
cgcagccgtc ctccagcac ggcccgtga taggagtcga cggcgagcac caggcacatg 41220
accagcggc catcggccat gctgtgccc aacatggacg cggccacggg ggtgatggtg 41280
aagacggcgg cggcgagcag acctggcacc acggccggc atcgccgcac gatccggtac 41340
atcaccagca ccgagatcac gccctcgatc acctgcggca aggcaagggc ccaggcgtgg 41400
aagccgaaga tcttgaccga gatggcctgc ggcacgaagg ccccggcgag cttgtcgagc 41460
gtgtaggtcg cctgcacgtc gacggtgccg tacaggaacg ccttccagtt ctccgacatg 41520
ctcttgacgg cgtccgagta tctcgggtgc tagtcgacca gcggcagggt ccaggcgtag 41580
agcaccgctg ccgtggccgc gatgcagagc agcgcggcc gggcccacca cggctggccg 41640
ggcggcgagc gccacaccgc ccagcggggg aatctgccgg cgggtgcggg gtcccggcac 41700
gcggacggcg gagtcatggt gatgtgcgac atgaggaact ccaggcgtt tccttcggca 41760
gttccctgcc ttactcggc tgcgtagcga atgaccggcc aggtggtctc gttatatccg 41820
ccgtccggtg cggcgttcct ggcattgctca tcgagtttg cgaacagggt cttgttcggc 41880
ccgtcgagca ccgacaactg cgtcgcgtag tgcttcacgc cctggaattt ccgcgtccgc 41940
gcctcctcat cgacgaaact cagctccgga gagccgagcc ggaggccgtc aggcaattca 42000
gccaggtcct ggggaatacgc cgcgtacggg agatcctgcc agagtcgcag cggaatacct 42060

cgctcgctg cggcgagcag cgtggcatcc cgcgtggcct tgtggtcggg gtgtttcccg 42120
atggccacac aggtgagaac gagcgtcggg tgcactccg cgatcatgga ctgatgtcc 42180
tccctgatcg cggcgaccag gtcgtgggtg ttcgccggcg actgctggcg gaccatcgag 42240
ccttcgttgt ggtgcagcag ccactggcca tccggtgacc ttcgatagat ggcatcgaga 42300
aaacggccat gccgatggcc cgcaccgagc tgatcgaggg cggcgatgtc ctcatctcgt 42360
cggcgacgcg gcgcgtcctc ggtcggcgac agaccccagc gtgcgtggaa tcgctccgcc 42420
gccggggaat aagggggcgc cgcgtgccc gccaacaccg tgaagacggt tacttttcca 42480
ccgtcctgct ccgcttgggc gaggctggct ccgacggaga ggacggcatc atccaaatga 42540
ggggagattg ctaatatccg ggttcggtcg gcgtcctgca acatgggtgt cagtctggtg 42600
tcggccctgc cccgttgcaa taaagcggaa ctggacggga cctcgcacgc gtggagaatt 42660
tccgggcggg ccgggcacca cgatgagtca cccggtcacg tcgcagtcac acgttctctg 42720
accagcctgt caccgtctgc tgcgtacaac tgggtgtcaac gccgacaccg ggcaggagaa 42780
gatgagtggg aagagcgcag ccgcacgacc tcgcctcggg cgcacgaac gacgccttcg 42840
ccgggctcac gtcggcgacc gcggcctcta ggatggcgcc agccggcgca gcgcgcgccg 42900
catgaggggg aagtggatct ctaccgagag gccaccctgc gggcgcgcggt gcgcggtcaa 42960
cgtggcgtcg tgggcgacgg cgatggcgcg gacgatggac agcccagagg cgtggtggtc 43020
gtcggcgcgg gtgcggtcga gccgctggaa gggctcgaag aggcggtgga cctgctcggg 43080
gggcaccacc gggccggtgt tggcgatgga gacgacggcc tccccggcct cggcccgggt 43140
ggagagctcc acctggccgc caggcacgtt gtagcgcag gcgttgtcca gaagggtggt 43200
gatgagtcgt tcgaccagtg ccgggtcgcc cgtggtgggg gcatgagcga tcccggtcac 43260
caatcggggg tgtgggcaac cggcccggag ggacttcccg tcggcccagg aatcggttgc 43320
cgcgccggcc gtggggctgt tcccgtcagc cctccgatcg gcactcacgc cggccctggg 43380
gttgttcccg tcagccccgg ggccggtccc ctccatcgtg cggatcgtgt gctcggcgat 43440
ctccgccaga tccaggggct cgcggtgac gaggcggccc tcgctcttgg ccagcgtcag 43500
cagcgattcc agcaggcgcc cctgctgccg gctgaggtcg agcagccgct ccatgatcga 43560
tcgcatggac ggggtgtcgg cgtcccgatg caggaggctc tctccagca acgcgtgctc 43620
cagggtgagc ggggtgcgca gctcgtgggc cgcgttggcg acgaagcgct tctgcgcgtc 43680
gagggcgctg tggagacgtt ccagcagctc gtccaccgtg tcggcgaggt tgcgcagctc 43740
gtcgcgcggg ccgggcaggg cgagccgctc gtggacgttg cgggcggaga tccgcttgag 43800
cgtggtgttc atcgtccgta gcgggcgcag catcctgcct gccaccagcc agccgagcaa 43860
gaacgagatg accgtcatca gggccagcgc gatcagcgat tggaacagca ggttctccag 43920
aatggccgcc tgctgctgcc gcgcgaaggc gcggaacctg ccgccagggt caccgtccac 43980

cagcacgaag ggtctggagc cgcggaagag caggtaggtg atggcgagca ggaccacccc 44040
tgaggcggcg aacaacgcgc cgtagacgag cgtgaggcgc agccgtacgc tgcggaaggc 44100
tgttgtcagg cgtcggagac gatggggccac tgttccgatg gtatgagacc aggaccggcc 44160
ggaggagccc acggcgccga cgtcgcggc cccggggccga ggccgagatg ccgcgagtcg 44220
ggcgccctacc gagtcagcgc accgcgcacc gctgccgtga cctcggggcgc caggggtgcgg 44280
gcgaaggtgg tggtgaggtg gctgcggtcg gagtaggcga tcaggccgcc gatgacgggg 44340
ccgcaccgct cgccgcacac caggtgatcg aactcgcga cggagacgag gccggtgtcg 44400
tcggcgcggg cggcggcggc gagcggatcc ggccggagca cgacgccggc cgggcccgcg 44460
caggagtcca gatcgtccgg gtgcttggcg atgcagtggg goacgctgtc cggcatggcc 44520
ggggtgtcac gcaggacgag caccggaagg ccggcgcccg tgaaggcccg gagcgtgtcg 44580
cggtaggccc gctcggccgc ggcctgctgg ccggctggcg agacgccggc gagcggcaca 44640
tgcgtacggt tggacatgat caccaggtcg tagccgccgt tcacgatgga cccgaccgcc 44700
cacttgttga tcttctggca gttctccgag acccccgcgc cttcgaggac gagcggctga 44760
tcgacggtgt agcacgccag ctgtacgtag gtggtgagct gccagcgctc gctccacagc 44820
gccttctcca gggccgggac ccagtgtccc gcgtgggagt tcccgaccag ggcgatgcgc 44880
ctgccggcgg cgtcaggtcc gtacgtgcac gtgttccggg cgatgaacgg ttccttgttc 44940
acgcaccgct ccgcgtacac ggccgggcttg tccttcaacg cgacctgagg aggcattcagc 45000
aggcccagat cctggcacgc cgggtcgcgc acgacgccgg caccaggca tgaccctgcc 45060
cgcgaggccg cggcctcgaa cgcggcactc tccgtacgtc cggcggcgtc ggcgtaggcg 45120
acgacgcccg ctcccgtcc tgcgacgacc accacgcacg acgcgagcat cgcgaacgtg 45180
agcctgcggc tgccgaccag gaccgggtgc cagcgcagcc ggtcctcgac gaggtactgc 45240
gagagcgcg cgaggaccag ggtcagcgcg atcacgcca cggactcgat cacggtcagc 45300
gagcggcca gcgcgtacgg gaggatcatg atcggcggcc aatgccacag gtacaccgcg 45360
taggaggcgt tgccgagcca ctggaccggc cgccacgcca gcgccgccc ggggtccgccg 45420
cgcagaccgt ccgcggccgc tgcgatcacc aggcaggccc ccactgtcgg caccaggcg 45480
gcggctccgg ggaaggccgt ctcggcgtcg aaccggacca cggcccaccc gatcatgccc 45540
aggccggccc acgcgagccc ggcccggacc gcccgcgcg gcggcatcgc gcgtacggtg 45600
agaaccgcgg cgagcagacc gccgagcgcg agctcccaga agcgggtcgt cgacacgaag 45660
tacgcggcgg ccggtacggt cgccgtcttc tgcaccgacc aggcgaggga cgcggccacg 45720
accgcaccgc tgaccaccac cgcgctccac ctctgaagt tctccggagg gcgacgccc 45780
cgtgccaccc gggcggccag ccaggccgcc gacccagca gcagcgcca gccgaggtag 45840

aactgttcct cgatggacag cgaccagtag tgctgcgcgg gccagtccgg ctggtcgacg 45900
tcgaggtagt tcgcctgcgt gagcgcgagt ctcaggttct ccacgtacac cgtggcggcg 45960
atcacctcac gcgccgccgt ccccagcacc gtgagcggca gccagaccac cgacgcggcg 46020
agcgtgacca ggagcgcgag gctcgcggcc gggatgagge ggcggacgcg gcgtgcccag 46080
aagtccagca gtctcccgcc gccgtgtccc ggctgacgca gcaggtggct cgtgatgagg 46140
taccgcgaga tgacgaagaa gacgtctacc cccacgtacc cgccggtcgg cccgccgggc 46200
cacaggtgga acgcgaccac cgccgccacc gcgatcgccc ggaggccctg aatgtccgtg 46260
cgggactcgg agctccggcc gccggcgtgc tcgcttcgcg gcgcacacga cggggcgtgc 46320
ggcgtcagcc cgcattgcga ggtcgggaagg gacatctgtt cgggtgggtgc cgggcgctcc 46380
atggcaactc ccgcgtcatc gaggtgctgc gcagccctcg aaggtcgcac ccgcggacga 46440
gagcctgctt gatcgcaagc gtgctcaacg gactcgatgt ctacaagccg gtccaggtga 46500
acgcttggtc accaccaccg gtgaacgcgt ccaagcgcgc gaactgttca gttggacca 46560
ctcgtggaca tcggctccgc tcagcacgat tgaggtcgct gacttgctg cgcggtgag 46620
aggagtcccg catggccata gtgtcgccgt tcggaggttt gctgaagggc gacggagagg 46680
atgatcccgc gccgtccagg atccgcccg ggacgttgcg acgagtgtc ggatacttcc 46740
gcccgcacgt cggcaagggtg gcgctcttcg ttctcgtcac cgcattggat tcgatcttcg 46800
tcgtcgcgtc tccgttgatg ttgaaggacc tgggtggaaa ggggggtctg gggaacgatc 46860
tgagctcgt catcctgctg gcgtgcctgg ccgccggctt cgccgtgatg agcacgctgt 46920
tgcagctcgt gtcggcctac atctccggcc ggatcgggca gggggtcagt tacgacctgc 46980
gggttcaggc ccttgaccac gtccagcggc tgccgatcgc gttcttcacc cggaccacga 47040
cgggcgtgct ggtcggcccg ctgcacacgg agctggatcat gacgcagatg gcgttcaccc 47100
agatgctgac ggccgccgcc agcgcgggtca cggtcctgct ggtgctggcc gagctgttct 47160
acctgtcgtg gatcgtcgcc ctcttcacgc tgggtgctgat cccggtgttc ctgggtgccct 47220
ggtcttacgt gggacggcgg atgcagcgt acaccagagg gctgatggag gagaacgccg 47280
gcctggccgg gctgctgcag gagcggttca acgtccaggg ggcgatgtc tccaagctct 47340
tcggccgtcc ggccgaggag atggccgagt acgagagcag ggccggcccg atccgcgggc 47400
tcgccgtgag cgtcacctc tacggccgga tggcccccgc catcttcgcg ctgatggccg 47460
cgctcgccac ggcgtcgtc tacgggggtcg gcggcgggct cgtgctctcg caggcgttcc 47520
agctcggcac gctggtcgcc ctggccaccc tgctcgggcg gctgttcggg ccgatcacc 47580
agctggccag cattcaggag aacgcgctca cggtcctggt gagcttcgag cggatcttcg 47640
agctgctcga tctgaagccg ctgatcgagg aacgccccga cgcggtcgcg ctcaaggccg 47700
gcaaggcctc ggacgtccag ttcgagaacg tgctgttccg ctaccccagc gcggacgagg 47760

tctcgctgcc gtcgctggaa cagaacgtgc gcaccgggca ggagcgtggt gaagcgacgc 47820
cggaggtgct gcgcgacgtg agcctgcacg tgccggccgg caccctcacc gcgctcgtgg 47880
gcccgtccgg cgccgggaag agcaccctca cgcacctggt gtcccggctg tacgacccga 47940
cctccggaac cgttcgcgtc ggccgacacg acctgcggga cctcaccttc gactcgctgc 48000
gcgaaacggt gggggtggtc agccaggaca cctacctctt ccatgacacg attcgggcga 48060
accttctcta cgcccgcccc gacgccaccg aggacgagct ggtcgaggcg tgccgagggg 48120
cgcagatctg ggacctgatc gcatccctgc cacgcgggct cgacaccgtc gtgggtgatc 48180
gcggttatcg cctgtcaggc ggggagaagc aacggctggc gatcgcccgg ctgctgctga 48240
aggcaccctc ggtcgtcgtt ctcgacgagg ccaccgcca cctggactcg gagtcggagg 48300
ccgccgtcca gcgggcactg acgacagccc tgcgcagccg tacctccctg gtgatcgccc 48360
accggttgct cacgatccgc gaggccgacc acattctcgt gatcgacgac gggaggggtca 48420
gggagcgcgg gacgcacgag gagttgctgg cggaaggcgg tctctacgcc gacctgtacc 48480
acacgcagtt cgccaagtca ggcgtcaacg ggacccggcc gggacagggc gacggggcgg 48540
agcccgtgca agaggtggtc ggtggagggg aacgatgagc gccggaacgc gggccacacc 48600
gacgacggtg ctggacctct tcgcccgcc ggtgggcccgg gcacccgatg cggtagctct 48660
ggtcgacggg gaccgggtcc tgacctaccg gcggctggac gagctcgccg gagcgctgtc 48720
cgggcgcctg atcggccggg gtgtcggccg gggtagtcgc gtcgcggtga tgatggaccg 48780
ctcggcggac ctggtggtga cgctgctcgc cgtgtggcag gcgggggcgg cctacgtgcc 48840
ggtggacgcc gcccttcccg ccgggcgggt ggcgttcacg gtggcggact ccggagcctg 48900
cctgatggtg tgctcggagg cgacgcgcga tgcggtaccg caaggggtcg agtcgatcgc 48960
gttgaccggc gagggcggat gcggcacgtc ggcggtcacg gtggaccggg gggatctggc 49020
gtacgtgatg tacacgtccg gctcgacggg caccgccgaag ggggtggccg tcccgcacgc 49080
gagcgtcgcg gagctgacgg gaaaccccg ctgggggggtg gagcccgccg aggcggtgct 49140
catgcacgcg ccctacacct tcgacgcctc cctgttcgag atctgggtgc cgctcgtgtc 49200
gggcgcccgg gtggtgatcg ccgcaccggg tgcggtggac gcccggcgcc tgcgcgaggc 49260
ggtcgcccgc ggggtgacga ggggtgcacct gaccgcgggc agcttccgcg cggtaggcga 49320
ggagtcgccg gagtcgttcg cgcacttccg tgaggtgctg accggtggtg acgtgggtgc 49380
cgcgtacgca gtgcagaagg tgcgggcggc ctgccctcac gtgcggatcc ggcacatctga 49440
cggcccgacg gagacgaccc tgtgcgcgac gtggcagctg ctggagccgg gtgacgtcgt 49500
ggggcccgtc ctgccgatcg gccgcccgt gccggggccgc cgggcctggg tgctcgacgc 49560
gtcattgcgg ccggtggagc ccgggggtgt cggtagacctg tacctttccg gcgcgggtct 49620
ggcggacggc tacctggacc gggcggggct gacggcgga cggttcgtgg eggatccgtc 49680

cgcgccgggg aggcgatgt atcgacggg ggatctggct cagtggaccg cggacggtga 49740
gctgctgttc gcgggcccgg cgcacgacca ggtgaaggtc cgcggattcc ggatcgagcc 49800
gggcgaggtc gaggccgcgc tgaccgctca gccgcacgtc cgcgaggccg tgggtggtggc 49860
gatcgacggg cgcctgatcg gttacgtggt ggcggacggg gacgtggatc ccgtactgat 49920
gcgccggcgg ctggcggcgt cgctgccgga gtacatgac ccggccgctc tggtcacgct 49980
ggacgcgttg ccgctgaccg gcagcggcaa ggtggacagg agggcgctgc ccgagcccga 50040
tttcgcgtcg gccgcgccgc gccgcgaacc cggcaccgag ccggagcgcg tcctgtgcga 50100
cctgttcgcg gagcttctgc aaccggaggg aaggggggta ggggtcgatg acggtttcgt 50160
cgagctgggc ggggactcga tcgtcgcgat ccggctggca gcacgtgcgt ccagggtggg 50220
gctgctggtg acgcccgcgc agatcttcaa ggagaagact ccggcacggc tggcagccgt 50280
cgcggtgccc gtaccggccg gcagaccgc cgacggcccg ctgatcacc tcacggcggga 50340
ggaggaggcg gagctggcga ccgcctccc gggggccgag gaggtctggc cactcgcacc 50400
gctccaggaa gggctctact tccaggccac cctcgacgac gagggtcacg acatctacca 50460
ggcgcaatgg atcctggagc tggcggggcc gctggacgcc gcccggtgc gggcctcgtg 50520
ggaagcggtc ttcgcccggc accccgagct tcgcgtgagc ttccaccggc gcgcgtcagg 50580
cacgatgctg caggtcgtcg ccgggcacgt cgtcctgccg tggcgagagg tggatctggc 50640
ggatgcgggc gatatcgacg cggccgtggc ggccctgatc agtgaggaa aggagcagcg 50700
gttcgacctc gccaaggcac cgctgttccg gctggtgctg gtccgtcacg gcgaggaccg 50760
gcaccgcctg ctggtcgtcc atcaccacat cctgaccgat ggctggtcgg tggcggtcac 50820
cctcaacgag gtggctgagg cgtacacgaa cggcggccgt ctcccggacc gcacgggcgc 50880
ggcctcctac cgggactacc tggcctggct ggaccggcag gacaaggacg ccgcacgtgc 50940
cgccctggcag gcggagctgt ccggcctcga agggcccgcg ccgatcgca aggccgccac 51000
cacgaccggc gccgggacgg gctacgaata tcgcatcgcc ttctgaccc ctgacctcca 51060
cacgcggctg acggagctgg cccgcgacca cgggctgacg ctgaacacc tggcacaggg 51120
cgcatgggcg atggtgctgg cgcggctcgc gcggcgact gacgtggtct tcggcaccac 51180
ggtcgcctgc cgtcccgcgc agctccccga ggtggagtcg gtgccgggtc tcatgatgaa 51240
cacggttccg gtccgggtgc cgctgcaggg cgcgcaatcg gtcgtggacc tgctcaccgg 51300
cctgcaggaa cggcaggcgg ccttgctgcc gcaccagcat ctggggctga cggagatcca 51360
gcgggcggca ggacctggcg cgacgttcga cacgtgctg gtcttcgaga actaccgcg 51420
ggacttcgcc ggccagttca cctacctggg cacgatcgag gggaccact acccgctgac 51480
cctcggcatc atcccggggg atcacttcag gatccagctc gtctaccggc gcgggcaggt 51540
cggggagagc gtcgccgagt cgatcctggg atggttcacc ggcgctctca tgacgatggc 51600

cgctgatccg cacggggccgg tgggcccgat cgggtgtgggt gaggcccggg ccggcggctc 51660
ggaccggggcg atggcggcgg gggagccgct gccggtgctg ctacggcggg tggatgaagga 51720
ccggcccggac gaggtggcgg tggatggacgg cgacgggtgag ctgtcgttcg gggaattgtg 51780
ggaacggggcg acggcgcctgg cggccgagct gagggctcac gggatcgggc cggagagccg 51840
ggtggccgctg atggatgggca ggtcggcgtg gtgggcgggtc ggggtgctgg gcgtctgctt 51900
ggcggggcggc gcgttcacgc cggatggatcc ggcgtatccg gctgagcgcg tcaggtggat 51960
cctggccgac tccgaccac ggctgggtgct gtgcgcgggg acgacgcggg aggcgggtgcc 52020
ggaggagttc gcagaccggc tggatgggtggt cgacgagctg gacctcgcgg ggagcgacga 52080
tgcgggcttg ccacgggtga gcccggtatga cgcggcttat gtgatctata cgtcgggatc 52140
gacggggact cccaaggggg tcgtcgtctc gcacgcgggc ctcggaatc tggcgatggc 52200
gcagatcgac cggttcgccg tgcgcgcgtc gtcgcgagtc ctgcagttcg cggcgcctggg 52260
cttcgacgcg atgggtgtcgg agatgttgat ggcgtgttg tcgggggcga ggctgggtgat 52320
ggcgcgggag ccggccctgc caccgcgggt gtcgtggcc gaggcgttg gcgggtggga 52380
ggtcacgcac gtcacggttc cgcgtcgggt gctggccacc gccgatgcgc tgccggcccg 52440
gctggagacg gtggatgggtg cgggggaggg ctgcccgcgg ggcctggccg aacgctggtc 52500
ggcgggacgg cggctgggtca acgcgtacgg gccgaccgag gccacgggtct gcgcggcgat 52560
gagcaggccg ttgacgggca gccgggaggt ggtcccgatc gggacacca tcgccggcgg 52620
ccgttgctac gtgctggacg cgttcctgcg gccgttgccg ccggggatca ccggtgagct 52680
gtacgtggcc gggatcgggt tggcgcgcgg ctatctgggt cgtgcgtcgt tgacggctga 52740
gcggttcgtg gcggatccgt tcgtggctgg tgagcggatg tatcggacgg gggatctggc 52800
gtattggacg ggtgagggcg agctgggtgt cgcggggcgg gatgacgacc aggtgaagat 52860
ccgtgggtat cgggtggagc cgggtgaggt ggaggcgggt ctggcggggc agccgggggt 52920
ggatcaggcg gtggatgggtg cgcgtgaggg gcggttgctg ggttatgtcg tctccgggtg 52980
tggggatgat ccggtgcgggt tgcgtgaggg ggtcgcgcgg gtgttgccgg agtacatggt 53040
gccggcggcg gtggatgggtc tgggtgcgggt gccggtgacg gcgaacggga aggtggatcg 53100
ggaggcgttg ccggatccgg gcttcggcgg gcgggtttcg ggccgggagc cgcgtacgga 53160
ggtcagacgg gcgttggtgc ggctcttcgc cgaggtgctc gggctgccgg gggatgacggc 53220
ggtggggccg gacgacagct tcttcgagct gggcggggac tcgatcactt cgatgcagct 53280
ggcgtcgcgg gctcgcgcgg aggggatgct cttcggcgcg cgggaggtgt tcgagcgcaa 53340
gacgcctgcg gggctcgcgg cgatcgtcga tgtgggcggc gagcttgccg caggtccggc 53400
cgacggcgtg ggggagatcg cgtggacgcc gatcatgcgg gcgctcgggg acgggatcgt 53460

ggggtcgcgg ttcgcccagt gggtagtgct gggtagcgcc cggacctac gggcggacgt 53520
ggtagccgcg ggattggcgg cggtagtgga cacgcacgac gtgttgccgc tgcgggtcgt 53580
cgatgaccgg gcgggcccgc ggctggcagt gggcgagcgc gggtaggtgg acacggccgg 53640
gctggtcacg cggctcgagt gcggcggccg tccgcccggac gaggtcgtgg agcgcgcgg 53700
gcgggaggcc gtggggcggg tggaccgggt ggccgggtgtg atggcgagg cggctctgggt 53760
ggatgcgggg ccggcgccga cggggcgggt ggtcgtcgtg gtgcatcatc tggcggtcga 53820
cgggatgtcg tggcggatcc tggtagccga cctgcggctg gcgtgtgagg cggtagccga 53880
ggggcgggat ccggtgctgg agccgggtgtg gggtagcttc cggcgctggg cggctctgct 53940
ggaggagtcg gcgtctcgc gggagcgggt cggggagctg cacacgtggc ggacgatcgt 54000
cgatcaggag gatcggccgg tcggccggcg gcggctgagc gcaggggatg cggccggggg 54060
cgtgcgttca cggtagtggt tgatgtcggg ggatgaggcg tcgtcctgg tggggaagg 54120
tccggtagcg ttccactgcg gggtagccga ggtcctgctg gcgggcctgg cgggagcgg 54180
ggcgcgctgg cacggtgacg acgggggtcct ggtggatgtg gaaggccacg ggcgtcatcc 54240
ggccgagggg atggatctgt ccaggacgggt gggctgggtc accagcatgc atccggtagc 54300
cctggatgtg gcggggatcg agctggcggc ggtgccggcc ggtggccgtg cggccgggca 54360
gttgcgtgaag gcggtcaagg agcagtcgcg ggcggcgccc ggcgacgggc tcggttacgg 54420
gttgcctgcg catctcaatc ccgagacggg ccccgttctg gcggccctgc cgtcaccgca 54480
gatcgggttc aactacatgg gccgggtcgt caccgtcgac cagggcgggtg cgcggccgtg 54540
gcagccggtc ggggggatcg gcgggtcgtt ggaccccggc atgggcctgc cgcgtgcgt 54600
ggaggatcaat gcgatcgtcc acgacaggct ggcgggcccg gagctgggtg tcacggtgga 54660
ctggcgggac gacctgctgg aggagaccga catcgaacga ctgtgccagg tgtggctgga 54720
catgttgtcc ggattgtccc gccaaagcga ggatccttcc gcaggcggac acaccgcgtc 54780
cgacttcgcc ctactcgacc tcgaccagga cgagatcgag ggcttcgaag ccatagcagc 54840
ggaactctct ggaggccaga catcgtgaac acgcccagca caccgcccgg atcggcgctt 54900
gaggaagtct ggccgctgtc accgatgcag gaggggatcc tctatcacgc cgcactcgat 54960
gaggcccctg acctctacct catccagcag tcgcagatca tcgaaggacc cttggacacc 55020
gagcgggttc gcctggcttg ggagagcctc ctcaaccggc atgcggcgct tcgcgcgtgc 55080
ttccaccggc ggaagtccgg tgagtcggtc cagctcatcc cccgtaagggt gccgctcccg 55140
tggtccgagc gcgacctgtc cggcctgtcc gaggaggacg cgtggccga ggcgagcgtg 55200
atcgcggaga aggagcgcgc cacgagattc gaccggcca agcctccgct gctgcggcag 55260
gtgctgatcc ggttcgggtc ggacaagcac tgtctgggtg cgacgagcca tcacctggtc 55320
atggacgggt ggtcgcgggc gatcctcgag tcggagctcc tcgagctcta cggcgcggt 55380

ggcgccgagc cggggctgcg gcccgccggc tcctaccggg actatctggc ctggctggag 55440
cggcaggaca aggaggccgc ccgcgcggca tggcgtgcg agctggcggg cgccgaccgt 55500
tcgacactcg gcatccccga agcgtccagg aagaccaggg ggcagcgggt gcgggaggtg 55560
ctcgggtacg cgccggactt cacctccgct ctggtggact tcgcccgcg ccatgggctg 55620
acgctgaaca cgctgggtgca gggggcgtgg gcgttggtgc tggcccggct. cacgcgccgt 55680
cgtgacgtgg tgttcggcgc ggtgggtctcg ggacgtccgg cggaggtgcc cggcgtggag 55740
caggccgtcg ggctgttcat caacaccgtg ccggtgcgcg tccggttgga cggcgggcag 55800
ccggtcatcc agctgctgac ggagctgcag gagcggcagt ccacgctcat ctgcgcatcag 55860
catctcgggc tgcaggagat ccagaagctc tccgggggtga gtttcgacac cgtcgtgtcg 55920
ttcgagaact acgtcgatcc gggggcgggt ccgggctccg atcgcgagct gcgcctgaga 55980
ctgaaggagt ttcaccagtc ggcgccgtac gcgctcctcc tcggcatcat gccagggtgag 56040
agcctccaga ccgacgtgga gtaccggccc gagctgctcg acgcccgcgt cgccaaggag 56100
gccctccacg ggctcgcccg cgtcctcgag cggatgatcg ccgagccgga gaccgcagtg 56160
ggccgcctgg acgtggtcgg tgacgcgggg gcgagctgg tggtcgagcg gtggaacgag 56220
acgggcgacg cgatecgtgc gccgtccgcg gtggacctgt tccggcgcca ggttgacgg 56280
gcacccgccg cgacggcggg gacggccggg gacctggcct ggtcgtacgc ggagctcgac 56340
gagcggctcg gccggctggc gcgggcactg acggaacgcg gcgtgcgacg cggcgaccgg 56400
gtgggcgtgg tgctggggcg gtcggcagag gtgctggcag cctggctcgg agtggtggaag 56460
gcaggcgcg cgttcgtgcc ggtcgacccg gactaccgg cggaccgggt ggcgttcatg 56520
ctggccgact ccgccgtcgc gatggtggtg tgccaggagg cgacctcggg tgtggtgccc 56580
ccgggctacc agcagctcct ggtgaacgac gccgacgac gcgagggcgc cctgggtccc 56640
atcggggcgg acgatctcgc ctacgtgatg tacacctcc gatcgaccgg gaccccgaag 56700
ggcgtggcga tcccgcacgg cggcgtggcg gcgctggcg gagatccggg atggggcgtc 56760
ggacccggcg acgcggtgct gatgcacgcc ccgcacacct tcgacgcgtc gttgtacgac 56820
gtgtgggtgc cgctcgtctc cggcgcgcg gtcgatgaca ccgagccggg ggtcgtcgac 56880
gcggagcggc tcgcccggca tgtggccgac ggcctcaccg cgggtcaact caccgcgggg 56940
cacttccgcg cgctggcgca ggagtcgccg gagtcgttct ccgggctgcg cgaggtggcg 57000
gcgggtggcg acgtggtgcc gctcgatgtg gtggagcggg tacggcgggc gtgcccgcgg 57060
ctccgggtct ggcacaccta cggcccgacc gagaccacgc tgtgcgcgac gtggaaggcg 57120
atcgagcccg gtgacgaggt ggggcccgtg ctgcccacgc gccggggcact gccggggccg 57180
cggctgtacg tgctggacgc gttcctgcgg ccgttgccgc cgggcatcgc ggggtgatctc 57240
tacctcgag gcgcccggag ggcacacggc tatctgggtc gtgcgtcgtt gacggctgag 57300

cggttcgtgg cggatccgtt cgtggctggt gagcggatgt atcggacggg ggatctggcg 57360
tattggacgg gtgagggcga gctgggtgttc gccgggaggg atgacgacca ggtgaagatc 57420
cgtgggtatc ggggtggagcc ggggtgaggtg gaggcgggtgc tggcgggggca gccggggggtg 57480
gatcaggcgg tgggtgggtggc gcgtgagggg cggttgctgg gttatgtcgt ctccgggtggt 57540
ggggtggatc cgggtgcggtt gcgtgagggg gtcgcgcggg tgttgccgga gtacatgggtg 57600
ccggcggcgg tgggtgggtgct ggggtgcggtg ccgggtgacgg cgaacgggaa ggtggatcgg 57660
gaggcgttgc cggatccggg ctccggcggg cgggttttcgg gccgggagcc gcgtacggag 57720
gtcgagcggg cgttgtgcgg gctcttcgcc gaggtgctcg ggctgccggg ggtgacggcg 57780
gtggggccgg acgacagctt ctccgagctg ggccggggact ccatccattc ggtgaagctg 57840
gcagcgcggg ccacgcgtgc cggcatgcc ttcaccgtgg tcgaggtgtt cgagcacaag 57900
acgcctgcgg ggctcgcgac gatcgtcgac gtgggcggcg agcccgcggc aggtccggct 57960
gatcccccat cggactccga cctgctcggc ctggcgcagg acgagatagc ggagtccgag 58020
gccgaattcg acgacgaacg tcattctctg cgctgatcga aagcgggcgc cgcgcacggt 58080
gtgccggcag cctgcgagtt gtccaacatc ctgtcgtgcc aatgacgtat gcccatgagt 58140
aggttggtc aatgataagc aaagcaatgc atggaccgat tcggcccgc cgcgcggata 58200
ccctgctggc ctccgtaggc gagcgaggca ttctgtgtga cttttacgac gagaacgcct 58260
cggaaatcct ccgtgatttg gaggcggacg cgggcggcac ggaagaagcc cacgggttcg 58320
cggcgcctcg ccgcccggag tcgggggcca tcctggagct cggggccgga acaggcaggc 58380
tgacgattcc gtcctggag ctccgctggg aggtgaccgc cctcgaactg tcgaccgcga 58440
tgctcaccac cctgcggacg cggctggcgg acgcgccggc ggacctccgg gatcgggtgca 58500
ccctcgttca cgcggacatg accgccttca aactgggaga acgcttcgga acggcgattc 58560
tcagcccgtc cacgatcgac ctccctggacg atgccgacag accagggtcg tactcgtcgg 58620
tcctgagca tctgcggccc ggccggagat tcctgctcgg catggccaac cccgacgcgt 58680
ccggcaggca ggagccgctg gagcgcaccc aggagtac gccgaggagc ggccgcccgat 58740
acgtgctgca cgccaaggct taccgctcgg aggagatecg cgacgtgacc attcatcctg 58800
cggatgaatc ggccggacccc ttctcatct gcgtcaatcg ctccagagtc atcaccgccg 58860
atcagatagc acgagagctg gagcaagccg gattcgacgt ggtcgcgcgg accccactgc 58920
ccgggggtgcg taatcacgaa ctgggtgctgg aagcgcaatg gggcagcgtg gaagacgcgc 58980
attagagccc tccggggaaa gcgcttgtgt acttttctgc agtcattcga cagtgaggaa 59040
cagaaatgag tgaggagctc ctcttcctcc ggcccagacac cattatcgaa ccgctggcca 59100
accggttcta cgctcgatg tacgcgacgg ctcccgtcac ggccgccatg aatctgcct 59160
tccgtaacct gccgatgctg gagtcctacc tcgcatcccc ggaatggcat ttcgcagccg 59220

ctcgcgatcc gaagttccgc ggcggattct tcgtcaacat cgaggagcag cggaagaacg 59280
aggtcgaggc gctgctcgct gcgatccggc gcgacagcgc ggacgtgctc cggttcgccg 59340
aggcgatcgc ggaggccgag aagatcatcc gcgaggaagc gaccggatac gatctcaggc 59400
cgctctaccc gaagctgcct cccgagctgt cgggtctggt ggagatcgcc tatgacaccg 59460
gcaacgcggc ctcgctgcac ttcttgagc cgctcatcta caagagcaag gcctacgccg 59520
aggactgcca gtccgttcag ctctccgtgg agaccgggat cgagcggccg ttcgtgatga 59580
gcaccccgcg actgccctca cccgacgtgc tcgagctgaa catcccgctc cggcatccgg 59640
gtctggagga gctcttcctg tccaggatcc ggcccaccac cctggccgcc ctccgcgagg 59700
cgctggagct cggcgacgcg gaagcggcgc ggctcgccga cctgctggtc ccggagccct 59760
cgctcgctc cgaccgccat gtcgcgccg gagcccgat ccgctactgg gggcacgcct 59820
gcctgctcat gcagacgcc gacgtggcca tcatgacgga cccgttcata agcgcggata 59880
ccgacgcgac cggccgctac acctacaacg acctgcctga ccgcctcgac tacgtcctca 59940
tcacgcacgg gcattccgac catctggtgc ccgagacgct gcttcaactg cgcggccggg 60000
tgggcacgtt cgtcgtgccg cgaacctcgc gcggcaacct gtgcgatcct tcgctggcgc 60060
tctatctcag aagcttcggg ctgcccgcga tcgaggtgga cgatttcgat gagatcgagt 60120
tccccggcgg gaagatcgtc tccaccccggt tcttcggcga gcacgccgat ctcgacatcc 60180
gggccaagtc gacgtattgg atcaacctcg gtggcaagtc gatctgggtg ggcgcggact 60240
cctcaggcct cgatccggtt ctctaccgcc atatccgccg gcatctcggc gcggtcaaca 60300
tcgccttcct cgggatggaa tgcgatggcg cgccgctgaa ctggcagtac cagccgttca 60360
tcaccaaggc gttgccgaag aagatgagcg acagccgcaa gatgtccggc tccaacgcgg 60420
agcaggcagg tgcgatcgtc accgagctgg gcgcgcgagga ggcgtacatc tacgccatgg 60480
gggaggagag ctggctgggg catgtcatgg ccaccagcta caacgaggac tcctaccagc 60540
tccagcagat cgccgagttc gaggcattgt gttcccgcaa ggggtgtgaag gccgctcatc 60600
tgctcgacca gcatgagtgg cactggtcgt catccaggtg atcgcggtgg ccgcgccgtc 60660
ggccttcgct caggcgggca gggccgcggt cgcaagcagc tgccgaggec gtgctcgccg 60720
aggccgtgct cgccgaggcc gtgcccgtgc tcgcccaggc cgtgcccgtg ctcgccgacg 60780
ccgtgctcgt cgaggccggt gccagagggc gcgtcaccgg cctctcagcg caaccggccg 60840
cgtgaaccgc ccggcggttc ggatcgttcg atatcagggc cggatcgaca acgcgtgggtg 60900
gaagtggtta cgcgggtcgt aggcggcctt caccttgccg agccgcgggt ggttcccctt 60960
gtagtagagg tcgtgccacg gcacgcccga ggtgttcaag ccgggatccg cgaggtcgct 61020
gtcggggtaa ttgatgtacg ccccatcgct gacgtcgctt ggcaccggca cccgcgccgt 61080

ctcggcggtac acatcgggnat agagcttgcg gaccacgctc agatgcttgg cctcgttgcc 61140
gggattcgcc caaccggtga tgtagttcac cttgagtatc gcgtcgcgct gcggcagggc 61200
ggtggccgcc gggtcgacgg tgttcacctt cccgccgtag ccgatcagcc agacggcgcc 61260
gtagtcgata ccgtccatgt gggtcatgtt ctcgtacacg gcctgaatct gccggtcggt 61320
cagccgcttg cgcaggtagc cggctttcgt cttcgacgcc gggcccctgc ctctcgcgc 61380
cggcgtcgag gccagccacc tctgttcgat cggctcgggc acctcggccg gcgggacgcc 61440
gtcgatcacc gcctcgatgt gcgcgtcgag cagtctccgg gcgtccggcc gggtagcgctc 61500
cacctggatg ggcatacatga agccgctctc acctatgccc gggacctcgt tcccgatcat 61560
gagctgactc cacagcccgg tgtagggcga gtcgggcccg ctgttccgct cgtaccactc 61620
cccgtgggtg cgcagcagcc gggagaacgc cgcctccgct atccccgcc agtcgaaggt 61680
cacctgctc gtgagcaacg tcgcggggcg cttcggcagc agccgctccg gattccggcc 61740
gacgtcctcc ggcacctca tccagtactt cgtgaccacc ccgaagtcc cgcgcgccacc 61800
gccggtgtgc gccaccaca ggtcgtgatg ggggtcgtcg cgctcacggg tcgccacgat 61860
cacgcgtgcc tccccctgtt tgttgacgac gacgacctc accgcgtaca agtagtcgac 61920
cacggagccg aactgccgtg acagcgggccc gtaccgcct ccgcagatgt gtccgccgac 61980
gccgacccc cgcagaccc cacccggtat ggtcacgttc cagcccaggt agagcttttc 62040
gtacacctct gagagcgtgt tgcccggctc gatcaggaac gcgttcatcg acgggtcgta 62100
cgcgatctcc gtcagcagcg acatgtcgat gatgaccttg acgtcggggg tgtagacgaa 62160
gtcctcgaaa cagtgccac cgctgcggac ggcgacccgc ttgccgggtgc gcaccgtctc 62220
ctcgacggca tcggccacct gctgggtgga gccgaccagg tggatgtagt cgggctcgcc 62280
gttgaagcgg ctgttggcgc cacgcagctt caggttgagg tagcgcgggt cgtccggagt 62340
caccttgacc gggccggccg gcggtaagca gcgtcgcgc cgcagctccg gtcgcgtgga 62400
cgaggcgccg gccgacgcgg cgtccgctcc ggtgccgccg gtcaccaccg ccgcgcgcgc 62460
cccggcaagg gaggcactca gcaatctacg tcggttcagt tttgtcatgg cggcgacgtt 62520
actatcggtt cgattcgatc aactcgtgt ctgactggac gtaagcgatc tcttcacgcc 62580
gtggccgtac gtggctgtcc atgcctaca gatttccgat ctctgaaggt acggtcacct 62640
gttgaagaac gcgtccgtca gcgcattcca ggtgacgcc cgcgaacgc gcgtcacgg 62700
gaaaactcgc cgtcgaggcg ggtgacgacg gaatcgtggg gtccaaccac ggaggccgtc 62760
agttggacgg tgccgtcctg agccagtttc tgccaaacga ctgggaacac catgggacat 62820
ccacacgata aagagcccga cggccaaatc cgtcctgcgg ctacagagccc ccgccggttg 62880
gtcgagatga cgagcacctc cgggcggcac ctgtatcacc gccaggtgcg attctccgat 62940
atcgacgcc acctgccagc caacaatgtg cgtttcctgg aatacctgga ggacgcctgg 63000

atcgccctct atctcgacaa tgcggggcccg ccgcaggagg accgcgacgg attgcccgcc 63060
gtgggggttcg ccgtcgtgcg ccacgagatc ttctatcggc gcccgctcag gttccggcac 63120
gggtcgggtgc gggtcgagtc gtgggtgacc aaggtgaaca gggtgacctg cgagatggcc 63180
gcgcagatct gctcggacgg ggaggtgttc gtcgaagccc gctcgatgat catgggggttc 63240
gacacgcaca ccgccaagcc gcggcgccctc accctgcacg agcgcacctt tctcaagcgt 63300
tacctgcgct gatgtgactt ctccattgcc ggccgcggct ccggggcgttg gacgattttg 63360
accgccgaga tcggccgagc ctaccttcac ggtgttcgct gcgaccggaa aggtgaattc 63420
aatggccgcg tccgaggtca agcaagtgc tccggagcaag ctcaggacat ggggggtggat 63480
gtatcgatga cgaccagcat cgcgtcggca gaagaccttt ccgtcctcac cggactgagc 63540
gagatcacca cgttcgccgg cgtggggaca gccgtttccg ccacgtccta ttcgcaagcc 63600
gagctgctcg aaatcctcga catacgcgat ccaggatcc gatcgctgtt cctgaacage 63660
gcgatcgagc ggcgttttct cgcgcttccg cccaggggcc gggacgggga gcgcgtggcg 63720
gaaccgcagg gtgatctcct ggacaagcac aaaaagctcg ccgtcgatat gggatgccgg 63780
gccctcgagt cctgcctgaa gtcggcgggc gcgacgctct cggatgtccg ccacctgtgc 63840
tgcgtcacct cgaccggttt tctcaccccc ggctgagcg cactcatcat ccgcgagctc 63900
gggctcgacc cgcattgcag ccgcgccgac atcgtcggca tgggatgcaa cgcggggctg 63960
aacgcgctca acctggtcgc gggctgggtcc gcggcgaccc cgggcgagct cgccgtcgtt 64020
ctgtgcagcg aggctgttc cgctgcttac gcactggacg gcaccatgcg caccgcggtg 64080
gtcaacagcc tgttcggcga cggatccgcc gccctcgccg tcgtctccgg tgacgggcgc 64140
gctgccggcc cgcgcgtcct gaagtgcgc agctacgtca tcaccgacgc gatcgaggcg 64200
atgcgctacg actgggaccg cgaccaggac cggttcagct tcttcctcga tccgcagatc 64260
ccctacgtgg tcggcgcgca cgccgagatc gtcgtcgaca agctgctgtc cggtacgggg 64320
ctgcgccgca gcgacatcg ccattggctg gtgcactccg gcggcaagaa ggtgatcgac 64380
gccatcgtcg tcaacctcg cctgagccgg catgacgtcc gccacacgac cgctgtgctc 64440
cgcgactacg ggaacctctc cagcggctcc ttcctcttct cctacgaacg gctcgccggc 64500
gagggcgtga ccaggcccgg agactacggg gtgctcatga ccatggggcc cggctccacg 64560
atcgaaacgg cgctgatcca atgggtgagt gcagtacat gaacggcgaa ctggagctga 64620
gcctcgacgg caccagggcg ctgaccgcgt cggtcgagga gctgaacggc ctctgcgacc 64680
gcgccgagga ccatcgagca cccggcccgg tcatcgcca cgtcaccggc gtgccgcgc 64740
ttggctggtc gaaggggctg acggtgggccc tggctctcaa gtgggagcgg gtggtgcgcc 64800
ggttcgaacg gctcggccgg ctcaccgtcg ccgtggcgtc aggcgactgc gcgggaccct 64860
ctctcgacct cctcctcgct gccgacgtgc ggatcgccgc tccggcgacc cggctgctgc 64920

cctcctgggc cggcggcgcc gcgtggccgg ggatggccgt ctaccggctc acccagcagg 64980
ccggtacggg cggcatccgg cgggccgtgc tgctcggggc acccatcgac gccgaccgcg 65040
cgctcgccct caacctgata gacgaggtgt ccgcggaccc ggcggcgctc ctggccggcc 65100
tggcgggtgc cggggacggc gcggagctgg cgattcgag gcagctgatg ttcgaggcga 65160
gctcaaccac tttcgaggac gcgctcgggtg ctcacctggc cgcggtggac cgggccctac 65220
gacgggagac cctctcgtga cgacggattg gccggcgctg ccgcccaggg cgccgctcgc 65280
cctctggacc ctgacggcgg agggccagcg agtcgacgac ctgctcgccg ggctgccgga 65340
gcctcctgcc agaacctccg cccagcgcga tgccgcggcc tcggcactcg acaagggtgag 65400
gcggatgcgc gcggactaca tggaggcgca cgcgaggag atctacggcg agctcacctc 65460
cggccgcacc cggcacctgc gcatcgacga gctcgtacgg gccgcccgcc gcgcctaccc 65520
cggcctgggtg cccaccgatg agcagatggc ggccgagcgc gcgcggccac aggcggagaa 65580
ggaaggcgcg gagatcgatc agggcatctt cctgcgcggg gtcctgcgtg ccccgaaggc 65640
gggcccgcac ctgctcgacg ccattgctccg gccaccccc agggcccttg agctgctccc 65700
tgaattcatc gagtccggcg aggtgcggat ggaggcggtc ctgctgcggc gccgtgacgg 65760
tgctcgctac ctgacctgt gccgggacga ctgcctcaac gccgaggacg cgcagcaggt 65820
ggacgacatg gagaccgcag tcgacctggc gctgctcgac cccaggtcc gggtaggggt 65880
cctgcggggc ggcgagatga gccatcccc gtaccggggg cgcggggtgt tctgcgcggg 65940
cgtcaacctc aagaagctga gctcgggcga catctccctc gtcgacttcc tcctacggcg 66000
cgagctgggc tacatccaca agatcgttcg cggcgtgtac acggacgggt cgtggcactc 66060
gaagctgacc gacaagccct ggatggcggt cgtcgactcc ttcgccatcg gcggtggggc 66120
tcagctcctc ctggtcttcg accaggtgct ggcggcgctc gactcctaca tcagcctgcc 66180
tgccggcgacg gaggggatca ttccgggggt cgcgaactac cggctcacc gccctcaccg 66240
gccacgcgcg gcccggcaga tgatcctcgg cgggcggcgg atccgggcgg acgagccgga 66300
cgcacgggtg atgatcgacg aggtcgtccc gccggaggag atggacgcgg cgatcgatcg 66360
cgcactggcc cgcctcgacg gagatgcggt gccggccaac cggcgcgatg tgaacctggc 66420
cgaggagccg cccgaggcgt tcggccggta cctggccgag ttcgccctgc agcaggcact 66480
gcgcactctac ggcagggacg tcatcggcaa ggtcggcagg ttcgcagcgg gatcggcatg 66540
agcgagcctc gcgtgcgcta cgagaagaag gaacacgtcg cccatgtgac gatgaaccgg 66600
ccccacgtgc tgaacgcgat ggatcgccgg atgcacgagg agctcgccga gatctgggac 66660
gacgtcgagg ccgacgacga cgtcaggacg gtcgtcctga ccggtgcggg aacgcggggc 66720
ttctccgtcg gccaggacct caaggaacgc gcgctgctgg acgaggcggg cacgcaggcc 66780
tcgacgttcg gcagccgggg gcaggcaggt catccccggc tgaccgaccg cttcaccttg 66840

tccaagccgg tggtcgccc ggtgcacggc tacgcgctgg gtggcggctt cgagctggtg 66900
ctcgctgcg acctcgcat cgcctccgag gaggcggtgt tcggcctgcc ggaggtccgg 66960
ctcggcctga tccccggggc gggaggcgtg ttccggctgc cgcggcagct gccgcagaag 67020
gtggcgatgg gccatctgct gaccgggccc cggatggatg cggccacggc gttccgggtac 67080
ggattggtga acgaggtcgt accgcttgat gagctggatc ggtgcgtggc cggatggacc 67140
gacgacctcg tacgcgccgc tccgctgtct gttcgcgcga tcaaggaggc cgccatgcgg 67200
tcgctcgaca ttcccctgga ggaggcgttc accacgtcct acccatggga agagcgtcgt 67260
cggcgtagcg gcgatgcgat cgagggcgctc cgggcgttcg tcgagaagag ggacccggtc 67320
tggacgtcga gatgatcccc ccgcacacgt tgctggtctt cttcgttcag gctgcggccc 67380
tcctgctgct cgcgttgctc ctgggcccgc tggccgtacg gctgggcctg gcggcggtcg 67440
tcggcgaaact gtgtgccggc gtcatectcg gccctccgt gctggggcag gtcgcgcccg 67500
gggcggagca gtggctgttt ccctcgccgt cgtcacacat gctggacgcc gtcgggcagc 67560
tcggcggtgtt gttgctgac ggcttgacgg gcgcgcacat ggatctgcgg ctgatccggc 67620
ggcagggcgc cacggcggtg cgggtgagcg ccttcgggtt ggtcgtgccg atggccctcg 67680
gcatcggcgc cggcctgttg ctgccggccg agttccgcgg gaccggcggc tcggccgtct 67740
tcgccctgtt cctgggggtg acgatgtgtg tcagctcgat ccccgatgac gccaagacgc 67800
tgatggacat gaacctgctc catcgcaacg tcggccagct cacgctgacc gccggcatga 67860
tcgacgacgc cttcgggtgg gtgctgcttt cgggtggtgac ggcgatggcc accgccggag 67920
ccgggtgcggg gaccgtggtg ctgtcgatcg cgtcgctget cgggggtgat gtcttcagcg 67980
tcgtcatcgg caggccggcg gtccgggtgg cgttgccggac gacggaggat caggggggtga 68040
tcgccggcca ggtcgtggtg ctggtgctcg cggccgcggc cgggacgcat gcgctgggccc 68100
tcgaaccgat cttcggggcc ttcgtcgccg ggctgctggt gagcacggcc atgccgaatc 68160
cggtcagact ggcaccgctg cgcacggtga cgctcgggggt gctggctccc ctctatttcg 68220
ccaccatggg cctgcgcgct gatctcacgg ccctggcgcg gccggagggtg ctcgccgtgg 68280
ggctgctggt cctggccctg gcgatcatcg gcaagttcct gggcgccttc ctgggcgcct 68340
ggaccagccg gctcagccga tgggaggcct tggcgctggg ggcggggatg aacgcccggtg 68400
gcgtcatcca gatgategtg gcgacggctg gcctgcggct ggggggtgat actgacgaga 68460
tcttcacgat catcategtg gtggcggtga tcacctctct gctcgccccg ccactcctgc 68520
gcctggccat gaccaggatc gaggccaccg ccgaggagga ggcccgcctc ctcgcctacg 68580
ggctgcgccc cggcgaggcc cgggaagacg tacggtgacg acggctcggg atcgtcgtgc 68640
ccgacgacaa ggccggcagc cggacggtgg tggccggtgc cggctcagcc acagtgggccc 68700

ggggtcgca tgcccagccg cgcgtgcagg tgcgcccaca gagcagcctg ctcgtgcccc 68760
aggaagaagt ggcctccggg caggacgtgg caggagaact cccgagccgt caactcggcc 68820
catcgcgca ccgcgtcgag ccgtacgacg ggatcgctccg caccggtgaa cgccgtgatc 68880
ggcaccgtca ggggcggccc aggcgtgtgg cggtaggact ggacgagctg gaagtcgttg 68940
cgcacgtagg ggagggcgaa cgcccggaaac tccgcgctcg cgagcgctc ggcatcggtg 69000
ccgccaaca ggcgcagcct gtcgatgagc gcctcctcgg aggccggcgc caccgatgc 69060
gcgagacggc cacggtcgtg cgcggccaca cctccggaga cgaagagatg agccggcggg 69120
ataccggacc cggtgagaag ccgcgccgtc tcgtaagcga tcaaactgcc catactgtgc 69180
ccgaacagcg ccaccggccg gtcgaggagc ggcctcagct cacgccccac cgactccgcg 69240
agccggtggg catcacgac gaggggttcg tgcaaccggt cggcgcgcc cgataactga 69300
accgcgtgca cttctatctc cggcgcgcc agccggtgcc aattccggta gaagaccgcc 69360
gaaccgcccg cgtgcggaaa acagatcagc cgcacgtgg cgagcggccg cctgtcgaaa 69420
caccgaaacc aggtggacat gtagcctcgc ttcggcctca tatcatggtc ttgggtcaat 69480
cctggtgacc tgactatatg cctgcaccgc cataaagtat gtccgtccac tcatcggcgg 69540
gcatgcggca cgagtctgcc caggtcgcac ttgacgcctg gtcggcaaag ggaaaaccct 69600
tgcttccatg gactcccacg ttctcgcca tcaattgagc aaggaaacgc tgcacggatc 69660
gctgatggac ccggccatcg agtcgatgaa tctactgaac gagattgccg gcaactacc 69720
cgacgccatt tccatggccg cgggcccggc gtacgaggag ttcttcgacg tcggcctcat 69780
ccacgactat ctggaggcct accgcgacca tctccgcaac gaccggcgga tggatgacgc 69840
cgggatcagc cgcattgctt tccaatacgg gaccacgaag gggatcatct ccgacctgt 69900
cgcccggcac ctcgccgagg acgagaacat cgaggccgac ccggcctccg tggatcatcac 69960
tgtgggcttc caggaggcca tgttcctggg gcttcgcgcg ctgcgagcga acgagcggga 70020
cgtcctgctc gccccacgc ccacctacgt cggcctgacc ggagcggcgc tgctcaccga 70080
caccctgtc tggccggtcc agtccaccga caacggcatc gacctgacc accttgagca 70140
ccaactgaaa cgcgcccagg accagggcgc ccgggtccgg gcctgctacg tgaccccgaa 70200
cttcgccaac ccaccggca ccagcatgga cctgcccgcc cgccatcgcc tcctggagg 70260
cgccgcggcc cacggcatcc tgatcctgga ggacaacgcg tacggactcc tcggccagga 70320
ccgcctcccc acgtgaagt ccctcgacca tgcggcgacc gtcgtctacc tcggctcctt 70380
cgccaagacc ggcattgccg gcgcccgggt cggctacgtc gtggcggacc agcacgtagc 70440
ggggggcggc tcgctcgccg acgagctcgc gaagctcaag ggcattgctca ccgtgaacac 70500
ctcgcccatc gccaggcgg tgatcgccgg caagctgctg cgccacgact tcagcctggc 70560
ccgggccaac gccgcgaga ccgcatcta ccagcgcaac ctccacctca cgctggacga 70620

actcaccgc cggctcggcg ccgtcccggg agtcacctgg aacgcgccga cgggcgggtt 70680
 cttcatcacc gtcaccgtgc ccttcgtcgt ggatgacgag ctgttggaac acgctgcccg 70740
 cgatcatggc gttttgttca cgccgatgca tcacttctat ggtgggaagg atgggttcaa 70800
 ccagcttcgg ctgtcgatca gcctgctcaa cccgcaactg atcgaggagg gtgtctcccg 70860
 gcttgccggg ctcgtcaccg catgtctccc ctgaaccatg cctggggcct tgagtcggac 70920
 ggccggggtt cgtgcggccg ggatgaaggt caaccacaag cgggtggtgc gcgagcacgg 70980
 cctcgccggg cgggtggccag cgaccaaggc ctcgacaaac gccatcgccg accctcccga 71040
 gggaggatcg gcggttgaag atctgtgtgc cccctgcagg attcgaacct gcgcacccgg 71100
 ctccggaggc cgggtgctcta tcccctgagc taaggggg 71138

<210> 2
 <211> 366
 <212> PRT
 <213> Nonomuria

<400> 2

Met His Glu Ser Pro Val Cys Leu Ala Glu Tyr Glu Glu Ile Ala Ala
1 5 10 15

Lys Val Leu Pro Ala Asp Val Arg Asp Phe Ile Asp Gly Gly Ser Gly
20 25 30

Arg Glu Gln Thr Leu Arg Ala Asn Arg Ala Ala Phe Asp Arg Val Phe
35 40 45

Leu Val Pro Arg Val Leu Gln Asp Val Ser Ala Cys Ser Thr Arg Ala
50 55 60

Thr Leu Leu Gly His Pro Ala Thr Met Pro Val Ala Val Ala Pro Val
65 70 75 80

Ala Tyr His Arg Leu Val His Pro Asp Gly Glu Leu Ala Thr Ala Arg
85 90 95

Ala Ala Arg Asp Ala Gly Val Pro Phe Thr Val Ser Thr Leu Ser Ser
100 105 110

Val Pro Val Glu Asp Val Thr Ala Leu Gly Gly His Val Trp Phe Gln
115 120 125

Leu Tyr Cys Leu Arg Glu His Ala Ala Thr Leu Gly Leu Ile Arg Arg
130 135 140

Ala Glu Asp Ala Gly Cys Arg Ala Leu Met Leu Thr Leu Asp Val Pro

Trp Met Gly Arg Arg Pro Arg Asp Ile Arg Asn Arg Phe Arg Leu Pro
165 170 175

Pro His Val Arg Pro Val His Leu Thr Ala Asn Ser Gly Thr Glu Ala
180 . . . 185 190 .

His Arg Gly Ala Ser Gly Gly Ser Ala Leu Ala Ala His Thr Ala Met
195 200 205

Glu Leu Ser Ala Ala Val Asp Trp Ser Tyr Leu Glu Thr Leu Arg Ala.
210 215 220

Ala Ser Gly Leu Pro Leu Val Val Lys Gly Ile Leu His Pro Glu Asp
225 230 235 240

Ala Arg Arg Ala Ala Asp Leu Gly Ile Asp Gly Ile Val Val Ser Asn
245 250 255

His Gly Gly Arg Gln Leu Asp Gly Ala Val Ala Ser Leu Asp Ala Leu
260 265 270

Pro Gly Val Ala Glu Ser Val Gly Gly Arg Cys Glu Ile Met Leu Asp
275 280 285

Gly Gly Val Arg Ser Gly Ala Asp Val Leu Lys Ala Leu Ala Leu Gly
290 295 300

Ala Ser Gly Val Leu Val Gly Arg Pro Val Ile Trp Gly Leu Ala Ala
305 310 315 320

Asp Gly Glu Arg Gly Val Arg Thr Val Leu Gly Leu Leu Gly Ala Glu
325 330 335

Ile Glu Asp Gly Leu Gly Leu Ala Gly Cys Gly Asp Val Ala Ala Ala
340 345 350

Gln Ala Leu Arg Thr Thr Arg Pro Gly Ala Gly Phe Val Ser
355 360 365

<210>	3
<211>	356
<212>	PRT
<213>	Nonomuria

<400> 3

Met Glu Ser Leu Pro Pro Leu Ala Val Asp Tyr Val Glu Met Tyr Val

Ala Val Asn Thr Leu Ser Glu Arg Gly Val Arg Phe Leu Ser Thr Pro

260

265

270

Gly Ser Tyr Tyr Asp Leu Leu Glu Ser Arg Ile Gln Ile Arg Gly His
275 280 285

Thr Val Asp Gln Leu Arg Ala Thr Gly Leu Leu Ala Asp Glu Asp His
290 295 300

Gly Gly Gln Leu Phe Gln Ile Phe Thr Ala Ser Thr His Pro Arg Glu
305 310 315 320

Thr Leu Phe Phe Glu Val Ile Glu Arg Gln Gly Ala Arg Thr Phe Gly
325 330 335

Gly Ala Asn Ile Lys Ala Leu Tyr Glu Ala Val Glu Val Ala Arg Ser
340 345 350

Gln Gln Arg Ala
355

<210> 4
<211> 867
<212> PRT
<213> Nonomuria

<400> 4

Met Leu Phe Gly Arg Asp Arg Glu Leu Lys Ser Leu Thr Arg Leu Leu
1 5 10 15

Asp Ser Thr Ala Ala Gly Arg Gly Gly Val Ala Val Ile Thr Gly Pro
20 25 30

Val Val Gly Gly Lys Thr Ala Ile Leu His Glu Leu Gly Met Arg Ser
35 40 45

Ile Ala Ala Gly Ile Arg Leu Val Thr Ala Arg Cys Thr Pro Ala Glu
50 55 60

Gln Ser Leu Asp Trp Gly Val Ala Asp Gln Ile Leu Gly Arg Gly Ala
65 70 75 80

Ala Glu Arg Leu Thr Ala Arg Arg Gly Gly Asp Ala Val Glu Asp Val
85 90 95

Cys Val Ser Leu Phe Gln Met Ala Glu Ala Asn Pro Ile Leu Leu Thr
100 105 110

Ile Asp Asp Val Asp Leu Ala Asp Asp Pro Ser Leu Leu Ala Ile Leu

115 120 125

Ser Met Thr Pro Leu Leu Thr Asp Thr Arg Met Met Ile Ala Val Thr
130 135 140

Ile Cys Gln Asp Arg Pro Pro Ala Pro Leu Pro His Val Ala Glu Ser
145 150 155 160

Leu Leu Arg Leu Pro Gly Ile Glu Leu Val Glu Leu Pro Leu Leu Pro
165 170 175

Arg Pro Ala Val Arg Gln Phe Ala Thr Glu His Leu Gly Ala Glu Thr
180 185 190

Ala Asp Gln Leu Ala Asp Asp Leu Tyr Arg Phe Ser Gly Gly Ser Pro
195 200 205

Leu Leu Val Arg Ala Leu Ile Glu Asp Gln Glu Ala Gly Ala Pro Gly
210 215 220

Leu Val Val Gly Asp Ser Phe Met Ser Ala Val Ala Ala Cys Val His
225 230 235 240

Gly Cys Glu Pro Glu Ala Val Arg Val Ala Glu Ala Val Ala Val Leu
245 250 255

Gly Glu His Ala Thr Pro Asp Ala Val Gly Glu Leu Val Gly Ile Ala
260 265 270

Pro Pro Ala Ala Thr Arg Ser Met Gly Met Leu Glu Arg Ala Gly Leu
275 280 285

Leu Ala Gly Gly Arg Phe Arg His Glu Ala Gly Arg Leu Ala Val Leu
290 295 300

Gly Arg Met Thr Ser Tyr Gly Arg Met Glu Ile Leu Arg Arg Ala Ala
305 310 315 320

Glu Ile Leu His Arg Arg Gly Gly Pro Pro Ser Ala Val Ala Thr Arg
325 330 335

Leu Leu Glu Ala Gly Trp Ser Gly Glu Glu Trp Ala Phe Asp Val Leu
340 345 350

Val Glu Ala Gly Arg Gln Ala Phe Asp Glu Gly Asp Phe Val Ala Val
355 360 365

Met Lys Cys Leu Arg Leu Ala Leu Ala Ser Gly Trp Gly Thr Pro Arg
370 375 380

Arg Leu Asp Val Lys Val Met Leu Ala Ala Ala Glu Trp Arg Val Asp
385 390 395 400

Pro Ala Val Ala Ala Arg His Val Pro Asp Leu Leu Asp Ala Thr Arg
405 410 415

Ser Gly Ala Leu Arg Gly Ser His Gly Met Glu Leu Phe Arg Gln Leu
420 425 430

Leu Trp Tyr Gly Arg Phe Ala Asp Ala Ala Glu Leu Ile Asp Arg Leu
435 440 445

Arg Pro Ser Val Ala Asp Arg Asp Ala Asp Ala Ser Leu Ile Ala Met
450 455 460

Cys His Val His Pro Val Leu Leu Asp Arg Leu Pro Arg Ser Ala Arg
465 470 475 480

Gly Ser Met Gly Gln Thr Val Glu Asp Ala Arg Arg Ile Leu Arg Gln
485 490 495

Ala Glu Pro Thr Asp Glu Ala Met Asp Ser Ile Ile Ser Ala Leu Met
500 505 510

Ala Leu Leu Leu Gly Gly Val Ser Glu Val Ala Ala Ser Cys Glu Thr
515 520 525

Leu Leu Lys Glu Pro Gly Val Thr Lys Ala Pro Thr Trp Lys Ala Ile
530 535 540

Ile Ser Ala Ile Arg Ala Glu Thr Ala Trp Arg Lys Gly Asp Leu Ala
545 550 555 560

Gly Ala Glu Ala His Ala Gln Glu Ala Leu Thr Ile Leu Gln Pro Ser
565 570 575

Gly Trp Gly Val Ala Ile Gly Ala Pro Leu Ser Thr Leu Leu His Ala
580 585 590

Gln Thr Ala Met Gly His Leu Asp Glu Ala Lys Ala Thr Val Ala Val
595 600 605

Pro Met Pro Arg Glu Thr Ala Glu Thr Ala Phe Gly Ile Gly Tyr Glu
610 615 620

Leu Ala Arg Ala His Tyr His Leu Val Thr Glu Gln Pro Arg Ala Ala
625 630 635 640

Phe Ala Gly Phe Leu Ala Cys Gly Gln Ala Val Gln Arg Trp Gly Ser
645 650 655

Ser Leu Ser Asp Val Val Pro Trp Arg Leu Gly Ala Ala Arg Ala Cys
660 665 670

Leu Gln Leu Gly Trp Arg Arg Arg Ala Ala Asp Leu Val Thr Ala Gln
675 680 685

Ile Ala His Thr Ser Ser Gly Asp Leu Arg Thr Tyr Gly Val Ala Leu
690 695 700

Arg Leu His Ala Gln Leu Ser Lys Pro Ala Gln Arg Gln Arg Leu Leu
705 710 715 720

Met Gln Ser Val Asp Ala Leu Glu Ala Ala Gln Asp Arg Tyr Gln Leu
725 730 735

Ala Leu Ser Leu Cys Asp Leu Ala Gly Thr Pro Gln Leu Lys Gly Gly
740 745 750

Lys Asp Glu Ala Arg Ala Tyr Trp Val Arg Ala Gln Glu Leu Ala Arg
755 760 765

Glu Cys Asn Ala Lys Pro Leu Met Arg Arg Leu Ala Ala Gln His Asp
770 775 780

His Gly Glu Thr Ala Pro Leu Ser Gly Ala Glu Arg Arg Val Ala Val
785 790 795 800

Leu Ala Ala Arg Gly His Thr Asn Arg Glu Ile Ala Glu Ala Leu Tyr
805 810 815

Ile Thr Arg Ser Thr Val Glu Gln His Leu Thr Arg Ile Tyr Arg Lys
820 825 830

Leu His Val Gln Thr Arg Gly Asp Leu Gly Asn Leu Phe Ala Ala Asp
835 840 845

Ile Ala Asp Lys Ala Thr Ala Thr Ala Gly Arg Glu Pro Arg Glu Ala
850 855 860

Val Arg Leu
865

<210> 5
<211> 321
<212> PRT
<213> Nonomuria

<400> 5

Met Asp Pro Thr Gly Val Asp Ile Ala Thr Leu Pro Val Val Glu Ile
1 5 10 15

Glu Leu Ser Arg Leu Ser Ser Val Tyr Ser Pro Arg Thr Ser Gly Glu
20 25 30

Asp Pro Glu His Val Glu Thr Leu Leu Ser Ala Gln Gly Glu Leu Pro
35 40 45

Pro Ile Leu Val His Arg Pro Thr Met Arg Val Ile Asp Gly Leu His
50 55 60

65 70 75 80

Leu Ile Asp Gly Thr Glu Ser Asp Ala Phe Val Leu Ala Val Glu Ala
85 90 95

Asn Val Arg His Gly Leu Pro Leu Ser Leu Ala Asp Arg Lys Arg Ala
100 105 110

Ala Val Arg Ile Ile Gly Thr His Pro Gln Trp Ser Asp Arg Arg Val
115 120 125

Ala Ser Ala Thr Gly Ile Ser Ala Gly Thr Val Ala Asp Leu Arg Arg
130 135 140

Arg Arg Gly Gln Gly Gly Asp Glu Ala Arg Ile Gly Arg Asp Gly Arg
145 150 155 160

Ile Arg Pro Val Asp Ser Ser Glu Gly Arg Arg Leu Ala Ala Glu Leu
165 170 175

Ile Arg Ser His Pro Asp Leu Ser Leu Arg Gln Val Ala Lys Gln Val
180 185 190

Gly Ile Ser Pro Glu Thr Val Arg Asp Val Arg Gly Arg Leu Glu His
195 200 205

Gly Glu Ser Pro Ile Pro Asp Gly Ser Arg Arg Leu Arg Thr Lys Pro
210 215 220

Glu Leu Leu Arg Arg Ala Glu Gln Asp Phe Gly His Val Asp Gly Arg
 225 230 235 240

Asp Arg Gln Ala Val Leu Glu Arg Leu Lys Ala Asp Pro Ala Leu Arg
 245 250 255

Leu Thr Glu Thr Gly Arg Ile Leu Leu Arg Met Leu Ser Leu His Ser
 260 265 270

Ile Asp Gly Gln Glu Trp Glu Arg Ile Leu Arg Gly Val Pro Pro His
 275 280 285

Trp Gly Thr Val Val Ala Arg Cys Ala Arg Asp His Ala Gln Ile Trp
 290 295 300

Ala Ala Phe Ala Asp Arg Leu Glu Gly Arg Ala Thr Asp Leu Ala Ala
 305 310 315 320

Gly

<210> 6
 <211> 369
 <212> PRT
 <213> Nonomuria

<400> 6

Met Thr Leu Glu Arg Thr Leu Ile Val Gly Thr Gly Leu Ile Gly Thr
 1 5 10 15

Ser Ala Ala Leu Ala Leu Arg Glu Lys Gly Val Ala Val Tyr Leu Ser
 20 25 30

Asp Val Asp Ala His Ala Val Arg Leu Ala Arg Ala Leu Gly Ala Gly
 35 40 45

Gln Glu Trp Thr Gly Gln Arg Val Asp Leu Ala Leu Ile Ala Val Pro
 50 55 60

Pro Pro Ser Val Gly Gln Arg Leu Ala Asp Leu Gln Gln Arg Arg Ala
 65 70 75 80

Ala Arg Ala Tyr Thr Asp Val Thr Ser Val Lys Val Asp Pro Ile Ala
 85 90 95

Asp Ala Glu Arg Leu Gly Cys Asp Leu Thr Ser Tyr Val Pro Gly His
 100 105 110

Pro Leu Ala Gly Arg Glu Arg Ser Gly Pro Ala Ala Ala Arg Ala Asp
115 120 125

Leu Phe Leu Gly Arg Pro Trp Ala Leu Cys Pro Arg Pro Glu Thr Gly
130 135 140

Ala Asp Ala Val Arg Leu Ala Arg Glu Leu Val Ser Met Cys Gly Ala
145 150 155 160

Glu Pro Tyr Thr Val Ser Ala Gly Glu His Asp Thr Ala Val Ala Leu
165 170 175

Val Ser His Ala Pro His Val Ala Ala Ser Ala Val Ala Ala Arg Leu
180 185 190

Arg Asp Gly Asp Asp Val Ala Leu Ala Leu Ala Gly Gln Gly Leu Arg
195 200 205

Asp Val Thr Arg Ile Ala Ala Gly Asp Pro Leu Leu Trp Arg Met Ile
210 215 220

Leu Ala Ala Asn Ala Leu Pro Val Ala Gly Val Leu Glu Arg Ile Ala
225 230 235 240

Ala Asp Leu Ala Ala Ala Ala Ser Ala Leu Arg Ser Gly Asp Leu Asp
245 250 255

Asp Val Thr Asp Leu Leu Arg Arg Gly Val Asp Gly His Gly Arg Ile
260 265 270

Pro Asp Lys His Gly Gly Pro Ala Arg Asp Tyr Thr Val Ile Gln Val
275 280 285

Val Leu Gln Asp Arg Pro Gly Glu Leu Ala Arg Leu Phe Asn Ala Ala
290 295 300

Gly Leu Ala Asp Val Asn Ile Glu Asp Ile Arg Leu Glu His Ser Ala
305 310 315 320

Gly Leu Pro Val Gly Val Val Glu Val Ser Val Arg Pro Glu Asp Thr
325 330 335

Gly Arg Leu Thr Glu Ala Leu Arg Phe His Gly Trp His Val Pro Pro
340 345 350

Val Pro Asp Gly Asn Ser Arg Ile Asp Arg Thr Arg Ala Met Val Ser
355 360 365

Asp

<210> 7
<211> 217
<212> PRT
<213> Nonomuria

<400> 7

Met Arg Val Leu Val Val Glu Asp Gln Val Asp Leu Ala Asp Ser Val
1 5 10 15

Ala Arg Val Leu Arg Arg Glu Gly Met Ala Val Asp Val Ser His Asp
20 25 30

Gly Asp Asp Ala Gln Glu Arg Leu Ser Val Ile Asp Tyr Asp Val Val
35 40 45

Val Leu Asp Arg Asp Ile Pro Gly Val His Gly Asp Glu Leu Cys Ala
50 55 60

Glu Ile Ala Val Asp Asp Arg Arg Thr Arg Val Leu Met Leu Thr Ala
65 70 75 80

Ser Gly Thr Thr Ala Asp Arg Val Ala Gly Leu Ser Leu Gly Ala Asp
85 90 95

Asp Tyr Leu Pro Lys Pro Phe Ala Phe Ala Glu Leu Val Ala Arg Ile
100 105 110

Arg Ala Leu Gly Arg Arg Ala His Pro Pro Ala Pro Pro Ile Leu Val
115 120 125

His Gly Asp Leu Arg Leu Asp Pro Ala Gln Arg Val Ala Ile Arg Gly
130 135 140

Gly Met Arg Leu Pro Leu Thr Thr Lys Glu Leu Ala Val Leu Glu His
145 150 155 160

Leu Leu Thr Ala Arg Gly Arg Val Val Ser Ala Glu Glu Leu Leu Glu
165 170 175

Arg Val Trp Asp Glu Gln Ala Asp Pro Phe Thr Thr Thr Val Lys Ala
180 185 190

Thr Ile Asn Arg Leu Arg Ser Lys Leu Gly Gln Pro Pro Val Ile Glu
195 200 205

Thr Val Pro Arg Glu Gly Tyr Arg Ile
210 215

<210> 8
<211> 196
<212> PRT
<213> Nonomuria

<400> 8

Met Arg Arg Ser Glu Gly Asp Asp Glu Pro Arg Thr Leu Pro Pro Arg
1 5 10 15

Ala Arg Asp Arg Val Tyr Thr Ala Val Thr Arg Val Leu Ala Val Leu
20 25 30

Leu Leu Pro Val Ala Phe Val Arg Gln Pro Gly Arg Ala Arg Glu Leu
35 40 45

Ala Cys Gly Trp Ala Leu Arg Met Arg Phe Pro Ala Glu Asp Leu Thr
50 55 60

Gly Leu Thr Asp Gly Ala Arg Ala Ala Phe Thr Ala Ala Arg Ala Glu
65 70 75 80

Ala Leu Trp Arg His Gly Gln Leu Val Gly Leu Thr Ser Gly Tyr Arg
85 90 95

Asp Pro Arg Val Gln Gln Arg Met Phe Glu Glu Glu Val Arg Arg Ser
100 105 110

Gly Ser Val Ala Ala Ala Arg Met Phe Val Ala Pro Pro Ala Glu Ser
115 120 125

Asn His Val Lys Gly Met Ala Leu Asp Val Arg Pro His Glu Gly Ala
130 135 140

Arg Trp Leu Glu Ala His Gly Ala Arg Tyr Asp Leu Tyr Arg Ile Tyr
145 150 155 160

Asp Asn Glu Trp Trp His Phe Glu His Arg Pro Glu Cys Gly Gly Thr
165 170 175

Pro Pro Arg Arg Leu Pro His Pro Gly Ala Ala Trp Ala Ser Arg Asn
180 185 190

Gly Gly Arg Val
195

<210> 9
 <211> 319
 <212> PRT
 <213> Nonomuria

<400> 9

Met Asp Ala Glu Ser Val Arg Arg Gln Leu Arg Leu Gly Glu Asn Ala
 1 5 10 15

Thr Ala Trp Leu Ser Arg Leu Glu Glu Leu Gly Pro Pro Pro Glu Pro
 20 25 30

Val Arg Leu Pro Gln Gly Asp Glu Ala Arg Asp Leu Leu His Arg Leu
 35 40 45

Glu Val Pro Ala Pro Asp Val Glu Glu Ile Val Ala Ala Thr Pro Gly
 50 55 60

Pro Asp Arg Asp Pro Ala Leu Trp Trp Leu Leu Glu Arg Ala His His
 65 70 75 80

Glu Leu Val Arg His Met Gly Asp Tyr Lys Val Lys Val Arg Gly Gly
 85 90 95

Pro Thr Leu Pro Tyr Glu Thr Gly Ala Ala Ala Arg Tyr Phe His Val
 100 105 110

Tyr Val Phe Leu Ala Thr Leu Pro Ala Leu Arg Arg Phe His Ala Thr
 115 120 125

Arg Asp Ile Pro Glu Ala Thr Thr Trp Glu Thr Leu Thr Gln Leu Gly
 130 135 140

Glu Ser Val Ala Ile His Arg Arg Lys Tyr Gly Glu Gly Gly Thr Asn
 145 150 155 160

Met Pro Trp Trp Leu Thr Leu Leu Val Arg Gly Leu Val Tyr Arg Leu
 165 170 175

Gly Arg Leu Gln Tyr Asn Leu Ala Val Ala Lys Asp Gly Thr Pro Val
 180 185 190

Leu Gly Leu His Ile Pro Glu Val Gly Gly Pro Leu Ile Pro Asp Ile
 195 200 205

Tyr Tyr Asp Ser Leu Arg Arg Ala Arg Pro Phe Phe Glu Arg His Phe
 210 215 220

Pro Glu His Gly Ala Arg Ala Ala Thr Gly Thr Ser Trp Leu Leu Asp
225 230 235 240

Pro Gln Leu Ala Glu Tyr Leu Ala Glu Asp Ser His Ile Leu Gln Leu
245 250 255

Arg Arg Gly Trp Thr Leu Leu Asp Ser Glu Pro Gln Asp Gly Asp Asp
260 265 270

Ala Ile Leu Glu Phe Val Phe Arg Tyr Asn Gly Gln Pro Leu Glu Glu
275 280 285

Leu Pro Gln Arg Ser Thr Leu Glu Lys Ala Val Val Thr His Leu Leu
290 295 300

Ala Gly Arg His Trp Tyr Gln Arg Ser Gly Arg Ile Glu Leu Pro
305 310 315

<210> 10
<211> 408
<212> PRT
<213> Nonomuria

<400> 10

Met Arg Val Leu Leu Ser Thr Ser Gly Ser Arg Gly Asp Val Glu Pro
1 5 10 15

Leu Leu Gly Leu Ala Val Gln Leu Arg Glu Leu Gly Ala Glu Thr Arg
20 25 30

Met Cys Ala Pro Pro Asp Cys Ala Glu Arg Leu Ala Glu Ala Gly Val
35 40 45

Pro Leu Val Pro Val Gly Thr Ser Met Arg Ala Lys Leu His Gly Lys
50 55 60

Arg Pro Pro Ser Leu Glu Asp Val Pro Arg Leu Asp Ala Glu Ala Ile
65 70 75 80

Ala Thr Gln Leu Asp Gln Val Leu Pro Ala Ala Glu Gly Cys Glu Val
85 90 95

Met Val Val Ser Gly Val Leu Ser Ala Ala Val Ala Val Arg Ser Val
100 105 110

Ala Glu Lys Leu Gly Ile Pro Tyr Val Tyr Val Phe Tyr Cys Pro Ile
115 120 125

Tyr Val Pro Ser Pro Tyr Tyr Pro Pro Pro Pro Pro Leu Gly Glu Gln
130 135 140

Pro Ala Arg Asp Val Thr Asp Asn Arg Val Leu Trp Asp Arg Asn Asn
145 150 155 160

Gln Gly Ala Tyr Gln Arg Phe Gly Ala Ala Leu Asn Ser Arg Arg Ala
165 170 175

Ser Ile Gly Leu Pro Pro Val Asp Asp Ile Phe Ser Tyr Gly Tyr Thr
180 185 190

Asp Arg Pro Phe Leu Ala Ala Asp Pro Val Leu Ala Pro Leu Gln Arg
195 200 205

Thr Asp Leu Asp Val Val Gln Thr Gly Ala Trp Ile Met Pro Asp Glu
210 215 220

Arg Pro Leu Pro Ala Glu Val Glu Ala Phe Leu Glu Ala Gly Pro Pro
225 230 235 240

Pro Val His Val Glu Phe Gly Ser Gly Pro Ala Pro Thr Asp Ala Ala
245 250 255

Arg Val Ala Ile Glu Ala Ile Arg Ala His Gly His Arg Val Ile Val
260 265 270

Ser Arg Gly Trp Ala Gly Leu Ala Pro Pro Asp Asp Arg Ser Asp Cys
275 280 285

Leu Thr Val Gly Glu Val Asn His Gln Val Leu Phe Gly Arg Val Ala
290 295 300

Ala Val Val His Ala Gly Ser Ala Gly Ile Thr Thr Ala Val Thr Arg
305 310 315 320

Ala Gly Ala Pro Gln Val Val Val Pro Gln Met Thr Asp Gln Pro Tyr
325 330 335

His Ala Gly Arg Val Ala Glu Leu Gly Ile Gly Val Ala His Asp Gly
340 345 350

Arg Val Pro Thr Val Glu Ser Leu Ser Ala Ala Leu Thr Thr Ala Leu
355 360 365

Ala Pro Glu Thr Arg Ala Arg Ala Ile Asp Val Ala Gly Lys Ile Arg
370 375 380

Ala Asp Gly Ala Ala Val Ala Ala Lys Leu Leu Leu Asp Thr Ala Ala
385 390 395 400

Gly Ala Gly Arg Asn Arg Thr Glu
405

<210> 11
<211> 489
<212> PRT
<213> Nonomuria

<400> 11

Met Glu Glu Phe Asp Val Val Val Ala Gly Gly Gly Pro Gly Gly Ser
1 5 10 15

Thr Val Ala Thr Leu Val Ala Met Gln Gly His Arg Val Leu Leu Val
20 25 30

Glu Lys Glu Val Phe Pro Arg Tyr Gln Ile Gly Glu Ser Leu Leu Pro
35 40 45

Ser Thr Val His Gly Val Cys Arg Met Leu Gly Val Thr Asp Glu Leu
50 55 60

Ala Ala Ala Gly Phe Pro Val Lys Arg Gly Gly Thr Phe Arg Trp Gly
65 70 75 80

Ala Arg Pro Glu Pro Trp Thr Phe Ser Phe Ser Val Ser Pro Arg Ile
85 90 95

Thr Gly Pro Thr Thr Phe Ala Tyr Gln Val Glu Arg Ala Arg Phe Asp
100 105 110

Glu Ile Leu Leu Gly Asn Ala Arg Arg Lys Gly Val Val Val Arg Glu
115 120 125

Gly Cys Ser Val Thr Glu Val Ile Glu Asp Gly Asp Arg Val Thr Gly
130 135 140

Leu Arg Tyr Val Asp Pro Asp Gly Gly Glu His Ala Val Ser Ala Arg
145 150 155 160

Phe Val Ile Asp Ala Ser Gly Asn Lys Ser Arg Leu Tyr Ser Ser Val

Gly Gly Thr Arg Asn Tyr Ser Glu Phe Phe Arg Ser Leu Ala Leu Phe
180 185 190

Gly Tyr Phe Glu Gly Gly Lys Arg Leu Ala Glu Pro Tyr Ser Gly Asn
195 200 205

Ile Leu Ser Val Ala Phe Asp Ser Gly Trp Phe Trp Tyr Ile Pro Leu
210 215 220

Ser Asp Thr Leu Thr Ser Val Gly Ala Val Val Arg Arg Glu Met Ala
225 230 235 240

Glu Lys Ile Gln Gly Asp Arg Glu Lys Ala Leu Ala Ala Leu Ile Ala
245 250 255

Glu Cys Pro Leu Ile Ser Glu Tyr Leu Ala Pro Ala Arg Arg Val Thr
260 265 270

Thr Gly Lys Tyr Gly Gln Leu Arg Val Arg Lys Asp Tyr Ser Tyr His
275 280 285

Gln Thr Lys Phe Trp Arg Pro Gly Met Ile Leu Val Gly Asp Ala Ala
290 295 300

Cys Phe Val Asp Pro Val Phe Ser Ser Gly Val His Leu Ala Thr Tyr
305 310 315 320

Ser Gly Leu Leu Ala Ala Arg Ser Ile Asn Ser Val Leu Ala Gly Asp
325 330 335

Val Glu Glu Lys Ile Ala Leu His Glu Phe Glu Ala Arg Tyr Arg Arg
340 345 350

Glu Tyr Ser Val Tyr Tyr Glu Phe Leu Leu Ala Phe Tyr Glu Met Asn
355 360 365

Val Asn Glu Glu Ser Tyr Phe Trp His Ala Lys Lys Val Thr Asn Asn
370 375 380

Lys Glu Tyr Thr Glu Leu Glu Ser Phe Val Asp Leu Val Gly Gly Leu
385 390 395 400

Ser Ser Gly Glu Thr Ala Leu Ala Thr Ser Gly Arg Ile Ala Glu Arg
405 410 415

Ser Ala Glu Phe Ala Ala Ala Val Asp Gln Met Ala Asp Gly Asp Asp
420 425 430

Ser Ser Met Val Pro Leu Phe Lys Ser Gln Val Val Lys Gln Val Met
435 440 445

Gln Glu Gly Gly Gln Glu Gln Met Arg Ala Val Leu Gly Ala Asp Ala
450 455 460

Glu Pro Glu Gln Pro Leu Phe Pro Gly Gly Leu Val Thr Ser Pro Asp
465 470 475 480

Gly Met Arg Trp Leu Thr His His Pro
485

<210> 12
<211> 420
<212> PRT
<213> Nonomuria

<400> 12

Met Arg Ile Asp Ser Glu Trp Ser Phe Asp Pro Gly Met Asp Asp Asp
1 5 10 15

Ile Asp Ala Gly Ala Pro Val Leu Gln Pro Thr Ala Asn Tyr Met Met
20 25 30

Arg Thr His Cys Asp Pro His Glu Asp Met Phe Ala Leu Arg Ala His
35 40 45

Gly Pro Leu Val Arg Ile Gly Gly Asp Ala Ala Thr Gln Leu Arg Val
50 55 60

Asp Tyr Val Trp Gln Ala Leu Gly Tyr Asp Val Val Arg Arg Ile Leu
65 70 75 80

Gly Asp His Glu Asn Phe Thr Thr Arg Pro Arg Trp Ser Ser Ala Pro
85 90 95

Ser Ile Ala Gly Glu Pro Ile Pro Pro Asn Leu Val Gly Gln Leu Ser
100 105 110

Val Tyr Asp Pro Pro Glu His Thr Arg Leu Arg Gly Met Leu Thr Pro
115 120 125

Glu Phe Thr Ala Arg Arg Ile Arg Arg Leu Glu Pro Ala Met Gln Asp
130 135 140

Leu Ile Asp Asp Arg Ile Asp Glu Leu Glu Ala Ala Gly Pro Pro Ala
145 150 155 160

Asp Val Gln Ala Leu Phe Ala Asp Pro Val Gly Gly Gly Val Leu Cys
165 170 175

Glu Leu Leu Gly Ile Pro Arg Asp Asp Arg Ile Glu Phe Ile Arg Arg
180 185 190

Val Arg Gln Asn Val Asp Leu Ser Arg Gly Phe Lys Ala Arg Ala Ala
195 200 205

Asp Ser Ala Ala Phe Asn Arg Tyr Leu Asn Gly Leu Ile Ile Arg Gln
210 215 220

Arg Lys Asp Pro Asp Glu Gly Phe Ile Gly Met Leu Val Arg Glu His
225 230 235 240

Gly Asp Asp Val Thr Asp Glu Glu Leu Lys Gly Val Leu Thr Ala Leu
245 250 255

Ile Leu Gly Gly Val Glu Thr Val Ala Gly Ser Ile Gly Phe Gly Val
260 265 270

Leu Ala Leu Leu Asp His Pro Asp Gln Arg Gln Ser Leu Phe Ala Gly
275 280 285

Arg Glu Glu Ala Asp Arg Val Val Gly Glu Leu Leu Arg Phe Leu Ser
290 295 300

Pro Val Gln Gln Pro Asn Pro Arg Leu Ala Val Arg Asp Val Val Val
305 310 315 320

Asp Gly Gln Leu Ile Lys Ala Gly Asp Tyr Val Leu Cys Ser Ile Leu
325 330 335

Met Ala Asn Arg Asp Glu Ala Leu Thr Pro Asn Ala Asn Val Leu Asp
340 345 350

Val Arg Arg Asp Cys Gly Ser His Val Gly Phe Gly His Gly Ile His
355 360 365

Tyr Cys Ile Gly Ala Ala Ile Ala Arg Thr Leu Leu Arg Met Ala Tyr
370 375 380

Gln Ser Leu Trp Arg Arg Phe Pro Gly Leu Arg Leu Ala Val Ser Ala
385 390 395 400

Glu Glu Val Lys Phe Arg Asn Ala Phe Ile Asp Cys Pro Asp Glu Leu
405 410 415

Pro Val Thr Trp

420

<210> 13
<211> 398
<212> PRT
<213> Nonomuria

<400> 13

Met Ser Gly Asp Gly Ala Arg Pro Leu His Thr Arg Arg Gln Asp Leu
1 5 10 15

Asp Pro Ala Asp Glu Leu Arg Ala Ala Gly Thr Leu Thr Arg Ile Thr
20 25 30

Ile Gly Ser Gly Ala Asp Ala Glu Thr Thr Trp Leu Ala Thr Gly Tyr
35 40 45

Thr Val Val Arg Gln Val Leu Gly Asp His Arg Arg Phe Ser Thr Arg
50 55 60

Arg Arg Trp Asn Glu Arg Asp Glu Ile Gly Gly Arg Gly Asn Phe Arg
65 70 75 80

Pro Arg Glu Leu Val Gly Asn Leu Met Asp Tyr Asp Pro Pro Glu His
85 90 95

Thr Arg Leu Arg Gln Lys Leu Thr Pro Gly Phe Thr Leu Arg Arg Ile
100 105 110

Arg Arg Leu Lys Pro Tyr Ile Glu Gln Ile Val Thr Glu Arg Leu Asp
115 120 125

Ala Leu Glu Arg Ala Gly Pro Pro Ala Asp Leu Val Glu Leu Val Ala
130 135 140

145 150 155 160

Asp Asp Arg Ala Met Phe Met Gln Leu Cys His Gly His Leu Asp Ala
165 170 175

Ser Arg Ser Gln Lys Arg Arg Ala Ala Ala Gly Ala Ala Phe Ser Arg
180 185 190

Tyr Leu Leu Ala Met Ile Ala Arg Glu Arg Lys Asp Pro Gly Glu Gly
195 200 205

Leu Leu Gly Ala Val Leu Ala Glu Tyr Gly Asp Thr Ala Thr Asp Glu
210 215 220

Glu Leu Arg Gly Phe Cys Val Gln Val Met Leu Ala Gly Asp Asp Asn
225 230 235 240

Ile Ser Gly Met Ile Gly Leu Gly Val Leu Ala Leu Leu Arg His Pro
245 250 255

Glu Gln Ile Ala Ala Leu Gln Gly Asp Asp Gln Ser Ala Asp Arg Ala
260 265 270

Val Asp Glu Leu Ile Arg Tyr Leu Thr Val Pro Tyr Ala Pro Thr Pro
275 280 285

Arg Val Ala Met Glu Asp Val Thr Ile Gly Gly Gln Val Ile Lys Glu
290 295 300

Gly Glu Thr Val Ser Cys Ser Leu Pro Met Ala Asn Arg Asp Pro Ala
305 310 315 320

Leu Leu Pro Asp Ala Gly Arg Leu Asp Val Arg Arg Glu Pro Val Pro
325 330 335

His Val Ala Phe Gly His Gly Val His His Cys Leu Gly Ala Ala Leu
340 345 350

Ala Arg Leu Glu Leu Arg Thr Val Tyr Thr Ala Leu Trp Arg Arg Phe
355 360 365

Pro Thr Leu Arg Leu Ala Asp Pro Asp Arg Glu Pro Ser Phe Arg Leu
370 375 380

Thr Thr Pro Ala Tyr Gly Leu Thr Ser Leu Met Val Ala Trp
385 390 395

<210> 14
<211> 384
<212> PRT
<213> Nonomuria

<400> 14

Met Val Val Pro Leu Pro His Gln Arg Leu Arg Leu Asp Pro Val Pro
1 5 10 15

Ala Leu Phe Asp Leu Gln Glu Asp Gly Pro Leu His Glu Tyr Asp Thr
20 25 30

Glu Pro Gly Leu Asp Gly His Lys Gln Trp Leu Val Thr Gly Tyr Gly
35 40 45

Glu Ile Arg Glu Ile Leu Ala Asp Ala Asn Arg Phe Ser Ser Met Arg
50 55 60

Pro Val Glu Asp Glu Ala Glu Arg Ala Trp Leu Pro Gly Ile Leu Gln
65 70 75 80

Ser Tyr Asp Ala Pro Asp His Thr Arg Leu Arg Arg Thr Val Thr Arg
85 90 95

Ala Asn Thr Ala Arg Arg Ile Glu Ser Leu Arg Pro Val Val Glu Glu
100 105 110

Thr Val Glu Asp Cys Leu Ala Asp Leu Glu Ser Met Gly Ser Pro Val
115 120 125

Asp Phe Val Arg Asn Ala Ala Trp Pro Ile Pro Ala Leu Ile Ala Cys
130 135 140

Asp Phe Leu Gly Val Pro Arg Asp Asp Gln Ala Glu Leu Ser Arg Met
145 150 155 160

Phe Arg Asp Ser Arg Glu Ser Arg Val Pro Arg Gln Arg Asn Val Ser
165 170 175

Gly Leu Gly Ile Val Asp Tyr Ala Arg Lys Leu Ala Ala Arg Glu Arg
180 185 190

Leu Asp Pro Gly Thr Gly Met Ile Gly Gly Ile Val Arg Glu His Gly
195 200 205

Gly Glu Val Thr Asp Glu Glu Leu Ala Gly Leu Val Glu Gly Ile Met
210 215 220

Ile Gly Ala Val Glu Gln Met Ala Ser Gln Leu Ala Ile Ala Val Leu
225 230 235 240

Leu Leu Val Thr His Pro Asp Gln Met Ala Leu Leu Arg Glu Arg Pro
245 250 255

Glu Leu Ala Asp Ser Ala Ala Glu Glu Val Phe Arg Tyr Ala Ser Ile
260 265 270

Val Glu Thr Pro Ser Pro Arg Thr Ala Leu Val Asp Thr Arg Leu Ala
275 280 285

Gly Arg Asp Ile His Ala Gly Asp Val Leu Thr Cys Ser Ile Leu Ala

290

295

300

Gly Asn Arg Ala Arg Glu Asp Arg Phe Asp Leu Thr Arg Gly Asn Pro
305 310 315 320

Glu His Leu Ala Phe Gly His Gly Val His Phe Cys Leu Gly Ala Pro
325 330 335

Leu Ala Arg Leu Gln Ala Gln Val Ala Leu Pro Ala Leu Val Arg Arg
340 345 350

Phe Pro Ser Leu Arg Leu Ala Val Pro Ala Glu Asp Leu Arg Phe Lys
355 360 365

Pro Gly Lys Pro Ala Pro Phe Ala Val Glu Glu Leu Pro Val Glu Trp
370 375 380

<210> 15

<211> 393

<212> PRT

<213> Nonomuria

<400> 15

Met Glu Val Phe Glu Glu Leu Asn Val Val Leu Pro Gly Glu Leu His
1 5 10 15

Trp Arg Asp Arg Phe Asp Pro Val Pro Gln Leu Arg Ser Phe Met Ala
20 25 30

Glu Gly Pro Met Thr Glu Leu Gly Ala Glu Glu Gly Pro Gly Gly Arg
35 40 45

Thr Ala Trp Leu Ala Thr Gly Phe Asp Glu Val Arg Gln Val Leu Gly
50 55 60

Ser Asp Lys Phe Ser Ser Arg Leu Leu Tyr Gly Gly Thr Ala Ala Gly
65 70 75 80

Ile Val Phe Pro Gly Phe Ile Thr Gln Tyr Asp Pro Pro Glu His Thr
85 90 95

Arg Leu Arg Arg Val Val Ser Pro Ala Phe Thr Val Arg Arg Met Glu
100 105 110

Arg Phe Arg Pro Gln Val Asp Gln Val Val Glu Asp Cys Leu Asp Ala
115 120 125

Ile Glu Ser Ile Gly Gly Pro Leu Asp Phe Val Pro His Phe Gly Trp

130

135

140

Ser Ile Ala Thr Thr Ala Thr Cys Asp Phe Leu Gly Ile Pro Arg Asp
145 150 155 160

Asp Gln Ala Glu Leu Ser Arg Ser Leu His Ala Ser Arg Ser Gln Arg
165 170 175

Ala Ala Ser Arg Arg Gly Ala Ala Gly Asn Lys Phe Met Thr Tyr Met
180 185 190

Gly Gln Val Val Ala Arg Thr Arg Arg Asp Pro Gly Asp Asp Met Leu
195 200 205

Ser Val Val Val Arg Glu His Gly Asp Glu Ile Thr Asp Ala Glu Leu
210 215 220

Thr Gly Leu Ala Ala Phe Val Met Gly Ala Gly Gly Asp Gln Val Ala
225 230 235 240

Arg Phe Leu Ala Ala Gly Ala Trp Leu Met Ala Glu Val Pro Glu Gln
245 250 255

Phe Ala Leu Leu Arg Asp Lys Pro Asp Val Val Pro Asp Trp Leu Glu
260 265 270

Glu Met Val Arg Tyr Leu Thr Ile Asp Glu Lys Leu Thr Pro Arg Ile
275 280 285

Ala Leu Glu Asp Val Arg Ile Gly Asp Arg Ile Val Lys Ala Gly Asp
290 295 300

Thr Val Thr Cys Ser Leu Leu Gly Ala Asn Arg Arg His Phe Pro Gly
305 310 315 320

Pro Asp Asp Gln Phe Asp Leu Thr Arg Asp Arg Ala Pro Asn Val Ala
325 330 335

Phe Gly His Gly Ile His His Cys Leu Gly Arg Pro Leu Ala Glu Leu
340 345 350

Ile Phe Arg Ser Ala Ile Pro Ala Leu Ala Arg Arg Phe Pro Ala Leu
355 360 365

Arg Leu Ala Glu Pro Glu Gln Glu Ile Arg Leu Gly Pro Pro Pro Phe
370 375 380

Asp Val Lys Ala Leu Leu Leu Asp Trp

385

390

<210> 16
<211> 69
<212> PRT
<213> Nonomuria

<400> 16

Met Thr Asn Pro Phe Glu Asn Glu Asp Gly Ser Phe Leu Val Leu Val
1 5 10 15

Asn Asp Glu Gly Gln His Ser Leu Trp Pro Ser Phe Ala Glu Val Pro
20 25 30

Pro Gly Trp Thr Arg Val His Gly Val Ala Thr Arg Gln Glu Cys Leu
35 40 45

Ala Tyr Val Glu Glu Asn Trp Thr Asp Ile Arg Pro Lys Ser Leu Ile
50 55 60

Ala Glu Ala Gly Ala
65

<210> 17
<211> 1863
<212> PRT
<213> Nonomuria

<400> 17

Met Thr Ile Asp Asp Thr Arg Ala Lys Pro Arg Ser Ser Val Glu Asp
1 5 10 15

Val Trp Pro Leu Ser Pro Leu Gln Glu Gly Met Leu Tyr His Thr Ala
20 25 30

Leu Asp Asp Asp Gly Pro Asp Thr Tyr Thr Val Gln Thr Val Tyr Gly
35 40 45

Ile Asp Gly Pro Leu Asp Ala Gly Arg Leu Arg Ala Ser Trp Gln Ala
50 55 60

Leu Val Asp Arg His Ala Ala Leu Arg Ala Tyr Phe Arg Tyr Val Ser
65 70 75 80

Gly Ala Gln Met Val Gln Val Ile Ala Arg Glu Ala Glu Ile Pro Trp
85 90 95

Arg Glu Thr Asp Leu His Gly Leu Pro Asp Asp Leu Leu Asp Ser Glu
100 105 110

Val Asp Arg Leu Ala Ala Asp Glu Leu Ala Glu Arg Leu Pro Leu Asp
115 120 125

Ala Ala Pro Leu Met Lys Leu His Leu Ile Arg Leu Gly Pro Ala Ser
130 135 140

His Arg Leu Val His Thr Leu His His Val Leu Leu Asp Gly Trp Ser
145 150 155 160

Met Pro Ile Leu His Arg Glu Leu Ala Ala Ile Tyr Ala Ala Gly Gly
165 170 175

Asp Ala Ser Gly Leu Pro Ala Ala Val Ser Tyr Arg Asp Tyr Leu Ala
180 185 190

Trp Leu Gly Arg Gln Asp Lys Glu Ala Ala Arg Ala Ala Trp Arg Gln
195 200 205

Glu Leu Ala Gly Leu Asp Thr Pro Thr Leu Val Ala Pro Ala Asp Pro
210 215 220

Ala Arg Val Pro Asp Met Gly Thr Ala Val Ile Glu Leu Ser Ala Glu
225 230 235 240

Leu Thr Asp Gly Leu Ala Arg Leu Ala Arg Gly His Gly Leu Thr Leu
245 250 255

Asn Thr Val Val Gln Gly Ala Trp Ala Met Val Leu Ala Gln Leu Ala
260 265 270

Gly Arg Thr Asp Val Val Phe Gly Ala Thr Ala Ser Gly Arg Pro Ala
275 280 285

Glu Leu Ala Gly Val Glu Ser Met Val Gly Gln Leu Leu Gly Thr Leu
290 295 300

Pro Val Arg Val Arg Leu Glu Gly Gly Arg Arg Val Val Glu Leu Leu
305 310 315 320

Ala Glu Leu Gln Arg Ser Gln Ser Ala Leu Met Ala His Gln His Leu
325 330 335

Gly Leu Gln Glu Met Gln Ala Ala Val Gly Pro Gly Ala Val Phe Asp
340 345 350

Thr Leu Val Ile Tyr Glu Asn Phe Pro Arg Gln Gly Leu Gly Arg Ala
355 360 365

Glu Glu Asp Gly Gly Leu Asp Leu Arg Pro Val Arg Arg Gly Arg Asn
370 375 380

Ser Ser His Tyr Pro Phe Thr Leu Ile Thr Gly Pro Gly Ala Gln Met
385 390 395 400

Pro Leu Ile Leu Asp Tyr Asp Arg Gly Leu Phe Asp Glu Ala Ala Ala
405 410 415

Glu Ser Val Val Gly Ala Leu Ala Arg Val Leu Glu Arg Leu Val Ala
420 425 430

Glu Pro Asp Val Leu Val Gly Arg Leu Thr Leu Leu Ser Glu Ala Glu
435 440 445

Arg Ala Leu Val Val Glu Asp Trp Asn Ala Thr Ala Gly Pro Thr Pro
450 455 460

Gly Gln Ser Val Leu Asp Leu Phe Gly Arg Arg Val Ala Thr Ala Pro
465 470 475 480

Asp Ala Val Ala Ile Thr Asp Ala Gly Gly Ala Asp Leu Thr Tyr Ala
485 490 495

Glu Val Asp Gln Ala Ala Asn Arg Leu Ala Arg His Leu Ala Ala Arg
500 505 510

Gly Ile Gly Arg Gly Asp Arg Val Gly Val Val Met Asp Arg Ser Pro
515 520 525

Asp Leu Leu Ile Ala Phe Leu Ala Ser Trp Lys Ala Gly Ala Ala Tyr
530 535 540

Val Pro Val Asp Val Glu His Pro Ala Glu Arg Ile Glu Phe Val Leu
545 550 555 560

Ala Asp Ser Gly Val Ser Ala Val Leu Cys Thr Arg Ala Thr Arg Glu
565 570 575

Val Ala Pro Ala Asp Ala Ile Val Ile Asp Ala Pro Glu Thr Arg Ala
580 585 590

Ala Ile Asp Ala Gly Ala Ala Thr Ala Pro Gln Ile Arg Leu Ser Ala
595 600 605

Asp Asp Leu Ala Tyr Val Met Tyr Thr Ser Gly Ser Thr Gly Leu Pro

610

615

620

Lys Gly Val Gly Val Pro His Gly Ala Val Ala Gly Leu Ala Gly Asp
625 630 635 640

Glu Gly Trp Arg Ile Gly Pro Gly Asp Ala Val Leu Met His Ala Thr
645 650 655

His Val Phe Asp Pro Ser Leu Tyr Ala Met Trp Val Pro Leu Ala Met
660 665 670

Gly Gly Arg Val Val Leu Thr Glu Pro Gly Val Leu Asp Ala Leu Gly
675 680 685

Met Arg Gln Ala Val Glu Arg Gly Val Thr Phe Val His Leu Thr Ala
690 695 700

Gly Thr Phe Arg Ala Leu Ala Glu Ser Ser Pro Glu Cys Phe Ala Gly
705 710 715 720

Leu Val Glu Val Gly Thr Gly Gly Asp Val Val Pro Ala Gln Ser Val
725 730 735

Glu His Leu Arg Arg Ala Val Pro Gly Leu Arg Val Arg Asn Thr Tyr
740 745 750

Gly Pro Thr Glu Thr Thr Leu Cys Ala Thr Trp Lys Pro Ile Glu Pro
755 760 765

Gly Glu Glu Val Gly Arg Glu Leu Pro Ile Gly Arg Pro Met Thr Asn
770 775 780

Arg Arg Ile Tyr Ile Leu Asp Ala Phe Leu Arg Pro Val Ala Pro Gly
785 790 795 800

Val Ala Gly Glu Leu Tyr Ile Ala Gly Thr Gly Leu Ala Arg Gly Tyr
805 810 815

Leu Gly Gly Pro Gly Leu Thr Ala Glu Arg Phe Val Ala Val Pro Ala
820 825 830

Ser Val Asp Pro Ser Pro Gly Glu Arg Met Tyr Arg Thr Gly Asp Leu
835 840 845

Ala Arg Trp Asn Arg Asp Gly Glu Val Val Phe Leu Gly Arg Thr Asp
850 855 860

Asp Gln Val Lys Ile Arg Gly Tyr Arg Val Glu Leu Gly Glu Val Glu
865 870 875 880

Ala Val Leu Ala Ala Gln Arg Gly Val Val Glu Ala Val Val Val Ala
885 890 895

Arg Glu Asp Gln Pro Gly Glu Lys Arg Leu Val Gly Tyr Phe Ile Ser
900 905 910

Asp Gly Thr Asp Ala Gly Pro Ala Glu Ile Arg Arg Glu Met Ala Leu
915 920 925

Val Leu Pro Ala Tyr Met Val Pro Leu Ala Val Val Ala Leu Pro Ala
930 935 940

Leu Pro Val Thr Pro Asn Gly Lys Val Asp Arg Leu Ala Leu Pro Ala
945 950 955 960

Pro Asp Leu Val Gly Arg Ala Pro Asp Arg Ala Gln Glu Ser Glu Thr
965 970 975

Glu Lys Val Leu Cys Ala Leu Phe Ala Glu Ile Leu Gly Val Asp Arg
980 985 990

Val Gly Val Asp Asp Ala Phe His Asp Leu Gly Gly Ser Ser Ala Leu
995 1000 1005

Ala Met Arg Leu Ile Ala Arg Ile Arg Glu Glu Leu Gly Ala Asp
1010 1015 1020

Leu Pro Ile Arg Gln Leu Phe Ser Ala Ala Thr Pro Ala Gly Val
1025 1030 1035

Ala Arg Ala Leu Ala Ala Lys Ser Arg Pro Ala Leu Glu Pro Ala
1040 1045 1050

Glu Arg Pro Gly Arg Val Pro Leu Thr Ala Gln Gln Leu Ser Ala
1055 1060 1065

Trp Leu Leu Ala Ser Pro Gly Glu Ala Ala Gly Leu His Val Ser
1070 1075 1080

Val Ala Leu Arg Leu Arg Gly Arg Leu Asp Val Pro Ala Leu Glu
1085 1090 1095

Ala Ala Leu Gly Asp Val Ala Ala Arg His Glu Ile Leu Arg Thr
1100 1105 1110

Thr Phe Pro Gly His Ala Gln Ser Val His Gln His Val His Asp
1115 1120 1125

Ala Ser Pro Val Asp Leu Thr Pro Val Pro Ala Thr Glu Glu Ser
1130 1135 1140

Leu Pro Gly Leu Leu Thr Glu Leu Arg Glu Ser Val Phe Asp Leu
1145 1150 1155

Thr Arg Glu Val Pro Trp Arg Gly Asp Leu Phe Arg Leu Ser Asp
1160 1165 1170

Gly Glu His Val Leu His Leu Met Val His Arg Ile Leu Ala Asp
1175 1180 1185

Asp Glu Ser Leu Asp Val Phe Leu Arg Asp Leu Ser Ala Ala Tyr
1190 1195 1200

Gly Ala Arg Arg Ala Gly Arg Ala Pro Glu Arg Ala Pro Leu Thr
1205 1210 1215

Leu Gln Phe Ala Asp Tyr Ala Ile Trp Glu Arg Arg Leu Leu Glu
1220 1225 1230

Gly Glu Arg Asp Ala Asp Gly Leu Ile Asn Glu Gln Leu Val Phe
1235 1240 1245

Trp Arg Asp Asn Leu Ala Gly Ile His Gly Glu Thr Val Leu Pro
1250 1255 1260

Phe Asp Arg Pro Arg Ser Ala Val Ala Ser Arg Arg Ala Gly Thr
1265 1270 1275

Val Ser Leu Arg Leu Asp Ala Gly Pro His Ala Arg Leu Val Glu
1280 1285 1290

Ala Val Asp Pro Ile Gly Ala His Pro Phe Gln Ile Val His Ala
1295 1300 1305

Ala Leu Ala Met Leu Leu Thr Arg Leu Gly Ala Gly His Asp Leu
1310 1315 1320

Val Ile Gly Thr Lys Leu Pro Arg Asp Asp Asp Leu Ile Asp Leu
1325 1330 1335

Glu Pro Met Ile Gly Pro Phe Ala Arg Pro Leu Ala Leu Arg Thr
1340 1345 1350

Asp Leu Ser Gly Asp Pro Thr Phe Leu Glu Val Val Thr Arg Ala
1355 1360 1365

Gln Glu Ala Ile Arg Ser Ala Arg Gln His Leu Asp Val Pro Phe

Ala Arg Ile Val Glu Leu Leu Asp Leu Pro Val Ser Leu Ser Arg
1385 1390 1395

His Pro Val Phe Gln Val Gly Leu Glu Val His Glu Glu Asp Leu
1400 1405 1410

Gly Ala Trp Asp Ala Thr Glu Leu Pro Ala Leu Arg Thr Ser Val
1415 1420 1425

Glu Pro Val Gly Pro Glu Ala Ile Glu Leu Asp Leu Ala Phe Arg
1430 1435 1440

Leu Thr Glu Arg Arg Asp Glu Asp Gly Ile Glu Gly Thr Leu His
1445 1450 1455

Tyr Ala Ala Asp Leu Phe Asp Gln Ala Thr Ala Glu Ser Leu Ala
1460 1465 1470

Arg Arg Leu Val Ser Phe Leu Glu Gln Val Ala Glu Asp Pro Gln
1475 1480 1485

Arg Arg Val Ser Asp Leu Asp Val Leu Leu Asp Asp Ala Glu Arg
1490 1495 1500

Glu Arg Pro Ala Glu Ala Pro Ala Lys Trp Ser Glu Ala Val Pro
1505 1510 1515

Pro Val Ala Ala Asp Leu Ala Glu Gly Gly Pro Leu Gly Ala Leu
1520 1525 1530

Val Leu Asp Asp Arg Leu Arg Pro Ala Val Ala Val Gly Glu Leu
1535 1540 1545

Tyr Leu Thr Gly Ala Ala Val Asp Ala Glu Pro Gly Asp Arg Thr
1550 1555 1560

Leu Ala Cys Pro Phe Gly Ala Thr Gly Arg Arg Met Leu Pro Thr
1565 1570 1575

Gly Leu Leu Ala Arg Trp Thr Ala Gly Gly Thr Leu Val Val Val
1580 1585 1590

Gly Glu Arg Arg Gly Ser Ser Gly Ser Val Lys Thr Gly Thr Gly
 1595 1600 1605

Asp Phe Glu Val Leu Leu Pro Leu Arg Ala Gly Gly Asn Arg Pro
 1610 1615 1620

Pro Leu Tyr Cys Val His Ala Ser Gly Gly Leu Ser Trp Asn Tyr
 1625 1630 1635

Ala Pro Leu Leu Arg Ser Leu Pro Pro Asn Gln Pro Val Tyr Gly
 1640 1645 1650

Val Gln Ala Arg Gly Leu Ala Arg Thr Glu Pro Leu Ala Ala Gly
 1655 1660 1665

Val Glu Glu Met Ala Ala Asp Tyr Val Glu Gln Ile Arg Ala Val
 1670 1675 1680

Gln Pro Thr Gly Pro Tyr His Leu Leu Gly Trp Ser Leu Gly Gly
 1685 1690 1695

Arg Ile Ala Gln Glu Met Ala Arg Val Leu Glu Glu Gln Gly Glu
 1700 1705 1710

Gln Val Gly Leu Leu Ala Leu Leu Asp Ala Tyr Pro Thr Asp Val
 1715 1720 1725

Gly Arg Leu Arg Arg Pro Arg Gly Asp Ala Ala Asp Gln Glu Ala
 1730 1735 1740

Ala Asp Phe Asp Arg Gln Gln Glu Gln Gln Ala Gln Leu Ala Ala
 1745 1750 1755

Ala Val Ala Thr Glu Ala Gly Ala Arg Lys Arg Leu Asp Glu Val
 1760 1765 1770

Met Glu His Leu Ala Arg Val Gly Pro Leu His Thr Ser Arg Ser
 1775 1780 1785

Phe Gly Cys Asp Ile Leu Leu Phe Val Ala Thr Val Asn Arg Pro
 1790 1795 1800

Ser His Leu Pro Val Ala Asp Ala Ile Ala Ser Trp Arg Pro Leu
 1805 1810 1815

Thr Thr Gly Thr Val Glu Pro His Glu Ile Glu Ile Asp His Met
 1820 1825 1830

Gln Met Leu Gln Pro Ala Ala Leu Ala Arg Ile Gly Ala Val Val
 1835 1840 1845

Ala Glu Lys Leu Arg Pro Arg Pro Asp Gly Glu Arg Thr Gln Arg
 1850 1855 1860

<210> 18
 <211> 4083
 <212> PRT
 <213> Nonomuria

<400> 18

Met Ala Gln Ser Arg Ile Glu Asp Phe Trp Pro Leu Ser Pro Leu Gln
 1 5 10 15

Gln Gly Leu Leu Phe His Thr Thr Tyr Asp Asp Asp Trp Pro Gly Leu
 20 25 30

Tyr Val Gly His Trp Ile Leu Asn Leu Asn Gly Pro Val Glu Ala Asp
 35 40 45

Arg Leu Arg Ala Ala Trp Glu Ala Leu Leu Ala Arg His Ala Ala Leu
 50 55 60

Arg Ala Cys Phe Arg Gln Arg Lys Ser Gly Glu Thr Val Gln Leu Ile
 65 70 75 80

Ala Arg Gln Val Glu Leu Pro Trp Arg Val Val Asp Leu Ser His Leu
 85 90 95

Ser Glu Pro Glu Glu Ala Val Arg Ala Val Ala Glu Glu Asp Arg Thr
 100 105 110

Arg Arg Phe Asp Leu Ala Lys Ala Pro Leu Leu Arg Leu Thr Leu Ile
 115 120 125

Arg Leu Ala Gly Asp Asp His Arg Leu Val Met Thr Cys His His Ala
 130 135 140

Ile Met Asp Gly Trp Ser Met Pro Ile Met Leu Asp Glu Leu Ser Met
 145 150 155 160

Leu Tyr Ala Ala Asp Gly Ser Pro Leu Asp Leu Pro Ala Val Pro Ser
 165 170 175

Tyr Arg Asp Tyr Leu Val Trp Leu Asp Arg Gln Asp Lys Glu Arg Thr
 180 185 190

Leu Ser Ala Trp Ala Ala Glu Leu Arg Gly Val Glu Glu Pro Thr Leu
195 200 205

Val Ala Pro Ala Asp Ala Asn Arg Ala Pro Ala Met Pro Glu Asn Ile
210 215 220

Thr Val Glu Leu Pro Glu Asp Leu Thr Arg Ala Leu Ser Glu Leu Ala
225 230 235 240

Arg Thr His Gly Leu Thr Leu Asn Thr Val Val Gln Gly Ala Trp Ala
245 250 255

Leu Leu Leu Ala Gln Leu Ala Gly Arg Thr Asp Val Val Phe Gly Ala
260 265 270

Ala Val Ser Ala Arg Pro Pro Asp Leu Pro Gly Val Glu Gly Met Val
275 280 285

Gly Leu Phe Leu Asn Thr Val Pro Val Arg Val Arg Leu Ser Gly Ser
290 295 300

Thr Pro Val Ile Glu Phe Leu Ala Asp Leu Gln Lys Arg Gln Ser Ala
305 310 315 320

Leu Ile Pro His Gln Tyr Met Gly Leu Ala Asp Ile Gln Arg Thr Ala
325 330 335

Gly Ala Gly Ala Val Phe Asp Thr Leu Leu Val Phe Gln Asn Phe Pro
340 345 350

Arg Glu Leu Arg Pro Ser Asp Ala Ala Ala Ala Phe Asp Ile Arg Ile
355 360 365

Asp Gln Gly Arg Glu Ala Ala His Tyr Pro Leu Thr Leu Val Ala Val
370 375 380

Pro Gly Glu Ser Met Leu Leu Asn Leu Asp His Val Thr Asp Leu Phe
385 390 395 400

Asp Arg Glu Ala Ala Leu Ala Ile Leu Glu Arg Phe Thr Gly Ile Leu
405 410 415

Arg Gln Leu Ala Gly Ala Gly Asp Leu Thr Val Ala Glu Val Asp Val
420 425 430

Thr Ser Ala Ala Glu Arg Ala Leu Val Val Asn Ala Trp Ser Ala Ala

435

440

445

Pro Arg Val Ala Pro Gly Glu Leu Ala Pro Asp Leu Phe Asp Arg Gln
450 455 460

Val Glu Arg Gly Arg Asp Arg Val Ala Val Val Glu Gly Lys Arg Ala
465 470 475 480

Val Ser Phe Gly Glu Leu Ala Glu His Ala Glu Arg Leu Ala Gly Tyr
485 490 495

Leu Ser Gly Arg Gly Val Arg Arg Gly Asp Arg Val Ala Val Val Met
500 505 510

Gly Arg Ser Pro Gly Leu Ile Ala Thr Leu Leu Ala Val Trp Lys Ala
515 520 525

Gly Ala Ala Phe Val Pro Val Asp Pro Ala Tyr Pro Ala Glu Arg Val
530 535 540

Gln Phe Met Leu Ala Asp Ala Glu Pro Ala Ala Val Val Thr Glu Arg
545 550 555 560

Ala Cys Gln Ala Ala Val Pro Ala Gly Gly Leu Asp Pro Ile Val Leu
565 570 575

Asp Asp Pro Asp Thr Leu Arg Ala Val Ala Glu His Ala Arg Leu Ser
580 585 590

Ala Gly Ala His Ala Asp Asp Leu Ala Tyr Val Met Tyr Thr Ser Gly
595 600 605

Ser Thr Gly Arg Pro Lys Gly Val Ala Val Ser His Gly Asn Val Ala
610 615 620

Ala Leu Ala Gly Glu Pro Gly Trp Gly Leu Gly Pro Glu Asp Ala Val
625 630 635 640

Leu Met His Ala Ser His Ala Phe Asp Ile Ser Leu Phe Glu Leu Trp
645 650 655

Val Pro Leu Leu Ser Gly Ala Arg Val Val Leu Ala Glu Pro Gly Ala
660 665 670

Val Asp Gly Glu Ala Leu Ala Gly Tyr Val Ala Gly Gly Val Thr Cys
675 680 685

77/138

Ala His Leu Thr Ala Gly Thr Phe Arg Val Leu Ala Glu Glu Ser Pro
690 695 700

Glu Ser Val Ala Gly Leu Arg Glu Val Leu Thr Gly Gly Asp Ala Val
705 710 715 720

Pro Leu Ala Ala Val Glu Arg Val Arg Arg Ala Cys Pro Asp Val Arg
725 730 735

Val Arg His Leu Tyr Gly Pro Thr Glu Ala Thr Leu Cys Ala Thr Trp
740 745 750

Trp Leu Leu Gln Pro Gly Glu Pro Thr Gly Pro Val Leu Pro Ile Gly
755 760 765

Arg Pro Leu Ala Gly Arg Arg Val Tyr Val Leu Asp Ala Phe Leu Arg
770 775 780

Pro Val Pro Pro Gly Val Thr Gly Glu Leu Tyr Val Ala Gly Ala Gly
785 790 795 800

Val Ala Gln Gly Tyr Leu Gly Arg Pro Ala Leu Thr Ala Glu Arg Phe
805 810 815

Val Ala Glu Pro Phe Val Pro Gly Gly Arg Met Tyr Arg Thr Gly Asp
820 825 830

Leu Ala Arg Trp Thr Asp Gln Gly Glu Leu Ala Phe Ala Gly Arg Ala
835 840 845

Asp Asp Gln Val Lys Ile Arg Gly Tyr Arg Val Glu Pro Gly Glu Ile
850 855 860

Glu Ala Val Leu Ala Gly Leu Pro Gly Val Gly Gln Ala Val Val Ser
865 870 875 880

Ala Arg Glu Glu Arg Leu Ile Gly Tyr Val Val Ala Glu Thr Gly Gly
885 890 895

Asp Leu Asp Pro Val Arg Ile Arg Glu Gln Leu Ala Ala Thr Leu Pro
900 905 910

Glu Phe Met Val Pro Ala Ala Val Leu Val Leu Asp Ala Leu Pro Leu
915 920 925

Thr Gly Asn Gly Lys Val Asp Arg Arg Ala Leu Pro Glu Pro Asp Phe
930 935 940

Ala Ala Gly Ala Val Asp Arg Glu Pro Ala Thr Asp Ala Glu Arg Ile
 945 950 955 960

Leu Cys Gly Val Phe Ala Glu Val Leu Gly Ala Gly Arg Val Gly Val
 965 970 975

Ala Asp Ser Phe Phe Glu Leu Gly Gly Asp Ser Ile Ser Ser Met Gln
 980 985 990

Val Ala Ala Arg Ala Arg Arg Gln Gly Ile Pro Leu Thr Pro Arg Gln
 995 1000 1005

Val Phe Glu His Arg Thr Pro Glu Arg Leu Ala Ala Leu Ala Gln
 1010 1015 1020

Gln Ala Pro Gly Arg Arg Ala Ser Ser Val Glu Pro Gly Val Gly
 1025 1030 1035

Glu Ile Pro Arg Thr Pro Val Met Arg Ala Leu Gly Asp Asp Ala
 1040 1045 1050

Val Arg Pro Gly Phe Ala Gln Ala Arg Val Val Val Thr Pro Ala
 1055 1060 1065

Gly Phe Ala Pro Asp Ala Leu Val Thr Ala Leu Gln Ala Val Leu
 1070 1075 1080

Asp Val His Asp Leu Leu Arg Thr Arg Val Glu Pro Asp Gly Arg
 1085 1090 1095

Leu Met Val Ala Glu Pro Gly Ala Val Asp Ala Ala Gly Leu Val
 1100 1105 1110

Thr Arg Val Ala Ala Gly Asn Gly Asn Leu Ala Glu Arg Ala Glu
 1115 1120 1125

Arg Glu Ala Arg Thr Ala Ala Gly Thr Leu Asp Pro Ser Glu Gly
 1130 1135 1140

Ile Met Val Arg Ala Val Trp Val Asp Ala Gly Asp Ala Glu Pro
 1145 1150 1155

Gly Arg Leu Ala Leu Val Val His His Leu Val Val Asp Ala Val
 1160 1165 1170

Ser Trp Ala Ile Leu Leu Ser Asp Leu Arg Ala Ala Tyr Asp Glu
 1175 1180 1185

Ala Val	Ser Gly Gly Thr	Pro Val Leu Glu Pro	Ala Val Thr Ser
1190		1195	1200
Tyr Arg	Gln Trp Ala Arg Arg	Leu Ala Gly Gln Ala	Leu Ser Glu
1205		1210	1215
Ser Thr	Val Ala Glu Ala Gly	His Trp Ala Gly Val	Leu Glu Gly
1220		1225	1230
Gly Asp	Leu Pro Leu Glu Arg	His Pro Gly Gln Ser	Ala Ser Trp
1235		1240	1245
Ser Arg	Thr Leu Ser Asp Ala	Gln Ala Arg Asn Leu	Val Ala Arg
1250		1255	1260
Val Pro	Ala Ala Phe His Cys	Gly Val Gln Asp Val	Leu Leu Ala
1265		1270	1275
Gly Leu	Ala Gly Ala Val Ala	Arg Trp Arg Gly Ala	Asp Ala Gly
1280		1285	1290
Ile Leu	Val Asp Val Glu Gly	His Gly Arg His Ala	Ala Asp Gly
1295		1300	1305
Glu Asp	Leu Leu Arg Thr Val	Gly Trp Phe Thr Ser	Val His Pro
1310		1315	1320
Val Arg	Leu Asp Val Ser Gly	Val Gly Pro Gly Ala	Ala Ala Ala
1325		1330	1335
Gly Glu	Leu Leu Lys Ala Val	Lys Glu Gln Ala Arg	Ala Val Pro
1340		1345	1350
Gly Asp	Gly Leu Gly Tyr Gly	Leu Leu Arg Tyr Leu	Asn Pro Glu
1355		1360	1365
Thr Gly	Ala Arg Leu Ala Glu	Leu Pro Ser Ala Gln	Ile Gly Phe
1370		1375	1380
Asn Tyr	Leu Gly Arg Ser Gly	Val Ala Ser Glu Asp	Thr Ala Trp
1385		1390	1395
Gln Val	Cys Glu Gly Ala Leu	Gly Gly Gln Ala Ala	Gly Pro Asp
1400		1405	1410
Leu Val	Gln Ser His Ala Leu	Glu Val Gly Ala Asp	Val Gln Asp
1415		1420	1425

Thr Pro Ala Gly Pro Arg Leu Arg Leu Ala Ile Asp Gly Arg Asp
 1430 1435 1440

Leu Asp Pro Ala Ala Val Glu Arg Leu Gly Glu Ala Trp Leu Asp
 1445 1450 1455

Thr Leu Ala Gly Leu Ala Ala Leu Ala Asp Thr Pro Gly Ala Gly
 1460 1465 1470

Gly His Thr Pro Ser Asp Phe Glu Leu Val Glu Val Arg Gln Arg
 1475 1480 1485

Asp Val Asp Glu Leu Glu Ala Val Ala Pro Gly Leu Thr Asp Val
 1490 1495 1500

Trp Pro Leu Ser Pro Leu Gln Glu Gly Ile Leu Phe Glu Arg Ala
 1505 1510 1515

Phe Asp Glu Asp Gly Val Asp Val Tyr Gln Thr Gln Arg Ile Leu
 1520 1525 1530

Asp Leu Asp Gly Pro Leu Asp Ala Gln Arg Leu His Ala Ala Trp
 1535 1540 1545

Gln Ser Val Ile Asp Arg His Glu Thr Leu Arg Thr Gly Phe His
 1550 1555 1560

Gln Leu Gly Ser Gly Glu Thr Val Gln Val Val Val Gly Glu Ala
 1565 1570 1575

Glu Val Leu Trp Arg Glu Ala Asp Leu Ser Arg Leu Asp Glu Pro
 1580 1585 1590

Asp Ala Glu Val Glu Arg Leu Leu Ala Ala Asp Gln Ala Glu Arg
 1595 1600 1605

Phe Asp Val Ser Arg Ala Pro Leu Leu Arg Leu Leu Leu Ile Arg
 1610 1615 1620

Leu Gly Ala Ala Arg His Arg Leu Val Val Thr Ser His His Val
 1625 1630 1635

Leu Val Asp Gly Trp Ser Thr Pro Ile Leu Leu Gly Glu Met Leu
 1640 1645 1650

Thr Ala Tyr Ala Asp Gly Arg Val Ser Pro Ala Pro Pro Ser Tyr
 1655 1660 1665

Arg Asp Tyr Val Ala Trp Leu Ser Arg Gln Asp Glu Asp Ala Ala
1670 1675 1680

Arg Ser Ala Trp Arg Ala Glu Leu Ala Gly Leu Asp Glu Pro Thr
1685 1690 1695

Val Val Gly Leu Asp Ala Gly Lys Ala Pro Val Met Pro Asp Gly
1700 1705 1710

His Ala Glu Trp Leu Ser Glu Glu Ala Thr Arg Ala Leu Thr Gly
1715 1720 1725

Phe Ala Arg Gly His Gly Leu Thr Leu Ser Thr Val Val Gln Gly
1730 1735 1740

Ala Trp Ala Leu Val Leu Ala Arg Leu Ala Arg Arg Thr Asp Val
1745 1750 1755

Val Phe Gly Thr Val Val Ser Gly Arg Pro Ala Asp Ala Leu Pro
1760 1765 1770

Asp Val Glu Arg Met Val Gly Met Phe Ile Asn Thr Val Pro Val
1775 1780 1785

Arg Val Arg Leu Asp Gly Ala Val Pro Val Leu Asp Leu Leu Gln
1790 1795 1800

Asp Leu Gln Arg Arg Gln Ser Ser Leu Thr Glu His Gln His Leu
1805 1810 1815

Gly Leu Pro Glu Ile Gln Lys Ala Ala Gly Pro Gly Ser Ile Phe
1820 1825 1830

Asp Thr Ile Leu Met Ile Val Asn Tyr Pro Leu Asp Ala Asp Gly
1835 1840 1845

Leu Asp Asp Gly Gly Val Ala Ile Ser Ser Ile Arg Thr Arg Thr
1850 1855 1860

Gly Thr Thr Tyr Pro Leu Ser Val Ser Val Ile Pro Gly Ala Arg
1865 1870 1875

Leu Gln Ile Gln Leu Asp Tyr Arg Pro Asp Trp Ile Gly Gly Asp
1880 1885 1890

Leu Ala Ala Glu Ile Thr Gly Gln Val Val Arg Val Leu Ala Arg

1895	1900	1905
Met Val Ala Glu Pro Ser Leu 1910	Pro Val Gly Arg Leu 1915	Ala Val Thr 1920
Ser Arg Ser Thr Arg Gly Ser 1925	Val Thr Glu Arg Trp 1930	Asn Ser Thr 1935
Gly Ala Ala Ala Gly Gly Ser 1940	Ser Val Pro Glu Leu 1945	Phe Arg Arg 1950
Gln Ala Asp Ala Ala Pro Asp 1955	Ala Thr Ala Val Ile 1960	Gly Asp Gly 1965
Arg Thr Leu Ser Tyr Ala Gly 1970	Leu Asp Arg Glu Ser 1975	Asp Arg Leu 1980
Ala Gly His Leu Ala Arg Arg 1985	Gly Val Arg Arg Gly 1990	Asp Arg Val 1995
Gly Val Leu Met Glu Arg Gly 2000	Ala Asp Leu Ile Val 2005	Ala Leu Leu 2010
Ala Val Trp Lys Ala Gly Ala 2015	Ala Gln Val Pro Val 2020	Asn Val Asp 2025
Tyr Pro Ala Glu Arg Ile Glu 2030	Arg Met Leu Ala Asp 2035	Ala Gly Ala 2040
Ser Val Ala Val Cys Ala Gly 2045	Ala Thr Arg His Ala 2050	Val Pro Asp 2055
Gly Ile Glu Pro Val Val Met 2060	Asp Ala Pro Ala Thr 2065	Glu Ala Glu 2070
Arg His Glu Ala Pro Pro Leu 2075	Ala Val Gly Ala His 2080	Asp Val Ala 2085
Tyr Val Met Tyr Thr Ser Gly 2090	Ser Thr Gly Val Pro 2095	Lys Gly Val 2100
Ala Val Pro His Gly Ser Ala 2105	Ala Ala Leu Ala Gly 2110	Asp Pro Gly 2115
Trp Ser Gln Gly Ala Gly Asp 2120	Arg Val Leu Met His 2125	Ala Ser His 2130

Ala Phe Asp Ala Ser Leu Leu Glu Ile Trp Val Pro Leu Val Ser
2135 2140 2145

Gly Ala Cys Val Met Val Ala Glu Pro Gly Ala Ile Asp Ala Gln
2150 2155 2160

Arg Leu Arg Asp Val Ile Ala Arg Gly Ala Thr Thr Val His Leu
2165 2170 2175

Thr Ala Gly Thr Phe Arg Val Leu Ala Glu Glu Ser Pro Asp Ser
2180 2185 2190

Phe Ser Gly Leu Arg Glu Val Leu Thr Gly Gly Asp Val Val Pro
2195 2200 2205

Leu Glu Ser Val Ala Arg Val Arg Arg Ala Cys Pro Glu Val Arg
2210 2215 2220

Val Arg Glu Leu Tyr Gly Pro Thr Glu Val Thr Leu Cys Ala Thr
2225 2230 2235

Trp His Leu Ile Glu Pro His Thr Glu Thr Gly Asp Thr Leu Pro
2240 2245 2250

Ile Gly Arg Pro Leu Ala Gly Arg Gln Val Tyr Val Leu Asp Ala
2255 2260 2265

Phe Leu Gln Pro Val Ala Pro Asn Val Thr Gly Glu Leu Tyr Leu
2270 2275 2280

Ala Gly Ala Gly Leu Ala His Gly Tyr Leu Gly Ala Pro Ala Ala
2285 2290 2295

Thr Ser Glu Arg Phe Ile Ala Val Pro Ala Ser Val Asn Pro Ala
2300 2305 2310

Ala Ser Gly Glu Arg Met Tyr Arg Thr Gly Asp Leu Ala Arg Trp
2315 2320 2325

Thr Asp Arg Gly Glu Leu Leu Phe Ala Gly Arg Ala Asp Ser Gln
2330 2335 2340

Val Lys Ile Arg Gly Tyr Arg Val Glu Pro Gly Glu Ile Glu Ala
2345 2350 2355

Ala Leu Ala Glu Val Pro His Val Ala Gln Ala Val Val Val Ala
2360 2365 2370

Arg Glu Asp Arg Pro Gly Glu Lys Arg Leu Ile Ala Tyr Val Thr
2375 2380 2385

Ala Glu Glu Gly Ser Gly Leu Asp Pro Asp Ala Val Arg Glu His
2390 2395 2400

Leu Ala Gly Arg Leu Pro Glu Phe Met Val Pro Ala Ala Val Val
2405 2410 2415

Leu Leu Asp Gly Val Pro Leu Thr Pro Asn Gly Lys Ile Asp Arg
2420 2425 2430

Ala Ala Leu Pro Val Pro Glu Phe Thr Gly Lys Ala Ala Gly Arg
2435 2440 2445

Glu Pro Arg Thr Glu Ala Glu Arg Val Leu Cys Glu Leu Phe Ala
2450 2455 2460

Glu Val Leu Gly Val Ala Arg Ala Gly Ala Glu Asp Ser Phe Phe
2465 2470 2475

Glu Leu Gly Gly Asp Ser Ile Leu Ser Met Arg Leu Ala Ala Arg
2480 2485 2490

Ala Arg Arg Glu Glu Leu Val Phe Gly Ala Lys Asp Val Phe Glu
2495 2500 2505

Arg Lys Thr Pro Ala Gly Ile Ala Met Val Ala Glu Arg Gly Gly
2510 2515 2520

Ala Thr Arg Ala Ser Leu Asp Asp Gly Val Gly Glu Val Met Ser
2525 2530 2535

Thr Pro Val Ile Arg Ala Leu Leu Glu Arg Asp Pro Asp Ala Met
2540 2545 2550

Thr Arg Gly Ala Leu Ser Gln Trp Val Thr Ala Gly Ala Pro Asp
2555 2560 2565

Asp Leu Ser Val Asp Val Leu Ala Ala Gly Leu Gly Ala Val Ile
2570 2575 2580

Asp Ala His Asp Met Leu Arg Ser Arg Ile Val Arg Thr Gly Ala
2585 2590 2595

Ala Gln Pro Arg Leu Val Val Ala Gly Arg Gly Ala Val Asp Ala
2600 2605 2610

Ala Thr Leu Val Glu Arg Val Glu Ala Gly Thr Gly Asp Val Asp
2615 2620 2625

Glu Ile Ala Asp Arg Cys Ala Arg Asp Ala Ala Ala Arg Leu Asp
2630 2635 2640

Pro His Ala Gly Val Met Ile Arg Ala Val Trp Val Asp Ala Gly
2645 2650 2655

Pro Gly Arg Val Gly Arg Leu Val Val Ala Ala His His Leu Val
2660 2665 2670

Val Asp Val Val Ser Trp Arg Ile Leu Leu Pro Asp Leu Gln Val
2675 2680 2685

Ala Cys Glu Ala Val Ala Ala Gly Arg Arg Pro Val Leu Asp Pro
2690 2695 2700

Val Asp Val Ser Phe Arg Arg Trp Ala Arg Thr Leu Ala Asp Gln
2705 2710 2715

Ala Val Thr Arg Ala Thr Glu Leu Glu Thr Trp Thr Glu Ile Leu
2720 2725 2730

Asp Gly Ala Arg Ser Arg Leu Gly Glu Leu Asp Pro Ala Arg Asp
2735 2740 2745

Thr Val Ser Thr Ala Gly Arg Thr Ser Trp Thr Leu Pro His Asp
2750 2755 2760

Arg Ala Gly Val Leu Val Glu Gln Ala Thr Ser Ala Phe His Cys
2765 2770 2775

Gly Val His Glu Val Leu Leu Ala Thr Leu Ala Gly Ala Val Ala
2780 2785 2790

His Trp Arg Gly Gly Thr Ala Val Val Val Asp Val Glu Gly His
2795 2800 2805

Gly Arg Arg Pro Ile Asp Glu Leu Asp Leu Ser Arg Thr Val Gly
2810 2815 2820

Trp Phe Thr Asp Val His Pro Leu Arg Leu Asp Val Thr Gly Ile
2825 2830 2835

Asp Pro Ala Glu Val Ile Ala Gly Gly Gly Ala Ala Gly His Leu

2840		2845		2850
Leu Lys Gln Val Lys Glu Asn Val Arg Ala Val Pro Asp Gly Gly				
2855		2860		2865
Leu Gly Tyr Gly Ile Leu Arg Tyr Leu Asn Ala Gly Thr Gly Gln				
2870		2875		2880
Ala Leu Ala Ala Ala Pro Lys Pro Glu Ile Gly Phe Asn Tyr Leu				
2885		2890		2895
Gly Arg Phe Pro Ser Arg Ser Ala Gly Ala Pro Glu Pro Trp Gln				
2900		2905		2910
Leu Leu Gly Thr Ile Gly Gly Thr Ala Glu Gln Asp Thr Ala Leu				
2915		2920		2925
Arg His Ala Val Glu Ile Asp Ala Ala Val Leu Asp Gly Ala Ala				
2930		2935		2940
Gly Pro Glu Leu Ser Leu Thr Val Thr Trp Ala Gly Arg Leu Leu				
2945		2950		2955
Gly Glu Ala Glu Ala Glu Ser Leu Ala Gln Ala Trp Leu Ala Met				
2960		2965		2970
Leu Thr Gly Leu Ala Ala His Val Gly Gly Gly Gly Ala Gly Gly				
2975		2980		2985
His Thr Pro Ser Asp Phe Pro Leu Ile Ser Leu Thr Gln Gln Asp				
2990		2995		3000
Val Ala Glu Val Glu Ala Ala Val Pro Thr Leu Leu Asp Ile Trp				
3005		3010		3015
Pro Leu Ser Pro Leu Gln Glu Gly Leu Leu Phe His Ala Ala Asp				
3020		3025		3030
Glu Arg Gly Pro Asp Val Tyr Ala Gly Met Arg Lys Leu Ala Leu				
3035		3040		3045
Asp Gly Pro Leu Asp Val Ala Arg Phe Arg Ala Ser Trp Gln Ala				
3050		3055		3060
Leu Leu Asp Arg His Pro Ala Leu Arg Ala Ser Phe His Gln Leu				
3065		3070		3075

Gly Ser Gly Ala Ala Val Gln Ala Ile Ala Arg Glu Val Pro Leu
3080 3085 3090

Asp Trp Gln Glu Thr Asp Leu Ser Arg Leu Pro Glu Asp Glu Ala
3095 3100 3105

Leu Ala Glu Phe Asp Arg Leu Ala Glu Gln Leu His Thr Glu Arg
3110 3115 3120

Phe Asp Leu Thr Arg Ala Pro Gln Leu Arg Leu His Leu Val Arg
3125 3130 3135

Leu Gly Glu Arg Arg His Arg Leu Val Leu Thr Ser His His Ile
3140 3145 3150

Val Ala Asp Gly Trp Ser Leu Pro Leu Ile Thr Glu Asp Val Leu
3155 3160 3165

Thr Val Tyr Glu Ser Gly Gly Asp Gly Arg Ala Leu Pro Ala Ala
3170 3175 3180

Thr Ser Tyr Arg Asp Tyr Leu Ala Trp Ile Ala Arg Gln Asp Lys
3185 3190 3195

Ala Ala Ala Arg Glu Ala Trp Arg Ala Glu Leu Ala Gly Leu Asp
3200 3205 3210

Glu Ala Thr His Val Val Pro Pro Glu Thr Ile Thr Thr Pro Leu
3215 3220 3225

Glu Pro Glu Arg Val Gly Phe Glu Leu Asp Glu Ala Leu Ser Arg
3230 3235 3240

Arg Val Val Glu Phe Thr Gly Arg His Gly Val Thr Ala Asn Thr
3245 3250 3255

Leu Phe Gln Gly Ile Trp Ala Leu His Leu Ala Arg Leu Thr Gly
3260 3265 3270

Arg Asp Asp Val Val Phe Gly Ala Ala Val Ala Gly Arg Pro Pro
3275 3280 3285

Glu Ile Pro Gly Val Glu Ser Ala Val Gly Leu Phe Met Asn Met
3290 3295 3300

Leu Pro Val Arg Ala Arg Leu Ala Gly Ala Glu Pro Phe Leu Asp
3305 3310 3315

Met Leu Thr Asp Leu Gln Glu Arg Gln Val Ala Cys Met Pro His
3320 3325 3330

Gln His Val Gly Leu Ser Glu Ile Asn Gln Leu Ala Gly Pro Gly
3335 3340 3345

Ala Ala Phe Asp Thr Ile Val Val Phe Glu Asn Tyr Pro Pro Pro
3350 3355 3360

Pro Pro Arg Pro Glu Gly Pro Asp Ala Leu Val Met Arg Pro Ala
3365 3370 3375

Gly Ile Pro Asn Asp Thr Gly His Tyr Pro Leu Ser Met Arg Ala
3380 3385 3390

Ser Val Ala Gly Arg Val His Gly Glu Phe Ile Tyr Arg Pro Asp
3395 3400 3405

Val Val Asp Arg Ala Glu Ala Glu Glu Met Leu Ala Ser Ile Leu
3410 3415 3420

Arg Ala Leu Glu Gln Val Val Ala Glu Pro Arg Val Pro Val Gly
3425 3430 3435

Arg Val Gly Leu Ile Gly Pro Glu Gln Arg Arg Leu Val Val Glu
3440 3445 3450

Glu Trp Asn Arg Thr Gly Val Pro Pro Ala Ala Glu Pro Val Pro
3455 3460 3465

Met Leu Phe Arg Arg Gln Val Glu Arg Ser Pro Asp Ala Val Ala
3470 3475 3480

Val Val Asp Ala Ala Arg Ser Leu Ser Tyr Ser Gly Leu Leu Asp
3485 3490 3495

Glu Ala Glu Glu Leu Ala Arg Leu Leu Val Gly Leu Gly Val Arg
3500 3505 3510

Arg Glu Thr Arg Val Gly Val Leu Val Gly Arg Ser Ala Glu Leu
3515 3520 3525

Val Val Ala Leu Leu Gly Val Ser Ser Ala Gly Gly Val Phe Val
3530 3535 3540

Pro Met Asp Pro Asp Tyr Pro Arg Glu Arg Ile Ser Phe Ile Leu
3545 3550 3555

Ala Asp Ser Ala Pro Glu Val Leu Leu Cys Thr Ser Glu Thr Arg
3560 3565 3570

Gln Ala Val Pro Glu Glu Phe Ala Gly Ala Val Val Ala Leu Asp
3575 3580 3585

Ala Pro Leu Ala Ala Asp Pro Arg Thr Ala Leu Pro Arg Val Glu
3590 3595 3600

Ala Gly Asp Gly Ala Tyr Val Ile Tyr Thr Ser Gly Ser Thr Gly
3605 3610 3615

Val Pro Lys Gly Val Leu Val Pro His Ala Gly Leu Gly Asn Leu
3620 3625 3630

Ala Ser Ala Gln Ile Glu Arg Phe Gly Val Thr Ser Ala Ser Arg
3635 3640 3645

Ile Leu Gln Phe Ala Ala Leu Gly Phe Asp Ala Ala Val Ser Glu
3650 3655 3660

Leu Cys Met Ala Leu Leu Ser Gly Gly Thr Val Val Leu Ala Asp
3665 3670 3675

Ala Glu Ser Met Pro Pro Arg Val Ser Leu Gly Asp Ala Val Arg
3680 3685 3690

Arg Trp Gly Ile Thr His Val Thr Val Pro Pro Ser Val Pro Ala
3695 3700 3705

Val Glu Asp Asp Leu Pro Asp Ser Leu Glu Thr Leu Val Val Ala
3710 3715 3720

Gly Glu Ala Cys Pro Pro Ala Leu Val Asp Arg Trp Ser Pro Gly
3725 3730 3735

Arg Arg Met Ile Asn Ala Tyr Gly Pro Thr Glu Thr Thr Val Cys
3740 3745 3750

Ala Thr Met Ser Ser Pro Leu Ser Pro Gly Arg Asp Val Val Pro
3755 3760 3765

Ile Gly Arg Pro Ile Thr Gly Leu Arg Ala Tyr Val Leu Asp Ala
3770 3775 3780

Phe Leu Gln Pro Val Pro Pro Gly Val Thr Gly Glu Leu Tyr Val

3785

3790

3795

Ala Gly Ala Gly Leu Ala Arg Gly Tyr Leu Gly Arg Pro Gly Leu
3800 3805 3810

Thr Ala Glu Arg Phe Val Ala Val Pro Ala Ser Val Ser Pro Ala
3815 3820 3825

Arg Pro Gly Glu Arg Met Tyr Arg Thr Gly Asn Arg Ala Arg Trp
3830 3835 3840

Thr Arg Asp Gly Glu Leu Val Phe Thr Gly Arg Ala Asp Ala Gln
3845 3850 3855

Val Lys Val Arg Gly Tyr Arg Ile Glu Pro Gly Glu Ile Glu Ala
3860 3865 3870

Val Leu Ala Asp His Pro Gly Val Ala Gln Val Ala Val Val Ala
3875 3880 3885

Arg Glu Asp Gly Pro Gly Gln Lys Tyr Leu Val Ala Tyr Val Val
3890 3895 3900

Pro Ala Ala Glu Gln Val Ala Gly Ala Pro Ser Glu Ala Gly Gln
3905 3910 3915

Asp Gly Ala Leu Ile Ser Ala Leu Arg Glu Ser Ala Ala Gly Arg
3920 3925 3930

Leu Pro Glu His Met Arg Pro Ala Ala Phe Val Pro Leu Asp Thr
3935 3940 3945

Met Pro Leu Thr Pro Asn Gly Lys Val Asp His Arg Ala Leu Arg
3950 3955 3960

Ala Pro Asp Phe Ala Arg Ser Ser Ser Gly Arg Asp Pro Arg Ser
3965 3970 3975

Ala Met Glu Ala Lys Leu Cys Glu Leu Phe Ala Glu Val Leu Gly
3980 3985 3990

Leu Glu Glu Val Gly Ala Gly Asp Ser Phe Phe Glu Leu Gly Gly
3995 4000 4005

Asp Ser Ile Thr Ser Met Gln Leu Ser Ala Leu Ala Arg Arg Lys
4010 4015 4020

91/138

Gly Leu Asp Leu Thr Pro Trp Gln Val Phe Asp Glu Lys Thr Ala
4025 4030 4035

Glu Arg Leu Ala Ala Val Val Lys Glu Leu Pro Ala Asp Gly Glu
4040 4045 4050

Gly Thr Gly Glu Pro Glu Pro Pro Ala Gly Thr Leu Val Asp Leu
4055 4060 4065

Ser Pro Asp Gln Leu Asp Gln Leu Glu Ala Gly Pro Ala Gly Gly
4070 4075 4080

<210> 19
<211> 753
<212> PRT
<213> Nonomuria

<400> 19

Met Ala Gly Phe Gly Ala Pro Phe Arg Asn Ser Asp His Val Val Ser
1 5 10 15

Lys Leu Thr Asn Glu Asp Ala Phe Glu Leu Val Glu Arg His Gly Ala
20 25 30

Asn Ala Ser Pro Leu Gly Arg Ala Met Leu Thr Val Arg Ala Gly Asp
35 40 45

Arg Ser Tyr Pro Glu Met Gly Val Gly Pro Val Ala Glu Ser Lys Asp
50 55 60

Leu Arg Trp Gln Gln Leu Thr Ser Gly Arg Phe Pro Glu Arg Lys Gly
65 70 75 80

Glu Ala Val Val Asp Leu Trp Asp Ala Gln Asn Trp Asp Val Ala Val
85 90 95

Gly Asp Arg Ile Arg Ile Gly Glu Arg Ala Thr Ala Ala Asp Phe Thr
100 105 110

Val Val Gly Ile Val Arg Ala Pro Ser Pro Val Ala Gln Ala Ser Val
115 120 125

Tyr Val Thr Trp Pro Gln Leu Met Arg Trp Ala Asp Asp Pro Ser Leu
130 135 140

Gly Ile Tyr Thr Val Thr Val Arg Gly Ala Val Gly Pro Val Pro Glu
145 150 155 160

Thr Ala Lys Val Gln Thr Pro Glu Gln Glu Ile Ala Ala Arg Thr Ala
165 170 175

Gln Leu Gln Asn Gly Val Asp Thr Trp Ser Leu Leu Leu Leu Leu Phe
180 185 190

Ala Gly Ile Ala Val Phe Val Ser Ile Leu Val Ile Ala Asn Thr Phe
195 200 205

Ser Ile Leu Leu Ala Gln Arg Met Arg Asp Phe Ala Leu Leu Arg Cys
210 215 220

Val Gly Ala Thr Arg Arg Gln Val Val Ser Ser Val Arg Arg Glu Ala
225 230 235 240

Ala Val Val Gly Leu Leu Ser Ser Leu Ala Gly Val Leu Val Gly Ala
245 250 255

Gly Leu Gly Tyr Gly Leu Ile Ala Leu Ile Lys Thr Leu Ser Pro Ile
260 265 270

Thr Pro Ile Ala Ala Pro Ala Pro Pro Ala Pro Trp Leu Leu Gly Gly
275 280 285

Leu Ala Ile Gly Leu Thr Ala Thr Leu Val Ala Ala Trp Leu Pro Ile
290 295 300

Arg Arg Val Val Arg Val Ser Pro Leu Ala Ala Leu Arg Pro Asp Thr
305 310 315 320

Ala Thr Asp Pro Arg Thr Ala Thr Gly Arg Ala Arg Leu Val Leu Gly
325 330 335

Val Phe Met Leu Ile Ala Gly Leu Val Leu Leu Ala Ser Ala Met Ala
340 345 350

Trp His Ser Thr Val Leu Met Leu Ala Gly Gly Gly Ser Leu Phe Thr
355 360 365

Gly Val Leu Leu Phe Gly Pro Val Leu Ile Pro Arg Leu Leu Glu Ile
370 375 380

Thr Gly Thr Arg Leu Gly Thr Ile Gly Arg Leu Ala Thr Lys Asn Ala
385 390 395 400

Val Arg Asn Pro Arg Arg Thr Ala Thr Thr Ala Ala Ser Leu Leu Val
405 410 415

Gly Ile Thr Leu Ile Thr Ala Val Leu Thr Gly Val Ala Ile Thr Ser
420 425 430

Glu Ala Leu Asn Glu Arg Leu Asp Gly Gln His Pro Ile Asp Ala Ala
435 440 445

Leu Val Ser Thr Gly Lys Pro Phe Ser Ala Asp Phe Leu Asp Lys Val
450 455 460

Arg Gly Thr Ser Gly Val Asp Gln Ala Ile Ala Val Asp Gly Ala Val
465 470 475 480

Ala Thr Val Ser Gly Leu Asp Lys Pro Ile Pro Val Val Thr Ala Pro
485 490 495

Asp Ala Gln Arg Val Ala His Asp Gly Gly Ser Phe Ala Arg Val Glu
500 505 510

Pro Gly Val Leu Arg Leu Asp Glu Ser Ala Phe Arg Gln Leu Arg Leu
515 520 525

Arg Ala Gly Asp Lys Val Arg Val Thr Val Gly Asp Arg Arg Ala Val
530 535 540

Leu Gln Val Ser Leu Ala Thr Gly Trp Gly Leu Gln Ala Val Val Ala
545 550 555 560

Pro Glu Thr Leu Ala Arg Leu Thr Asp Ser Ala Ala Pro Arg Ala Val
565 570 575

Trp Ile Arg Ala Ser Ala Asp Ala Asp Ser Thr Arg Leu Val Gly Glu
580 585 590

Leu Gly Asp Leu Ala Ala Ala Ala Gly Ala Asn Val Asn Asp Gln Leu
595 600 605

Glu Ala Arg Glu Thr Glu Asn Ala Pro Leu Met Ile Leu Thr Trp Ala
610 615 620

Ile Val Ala Leu Leu Gly Phe Ser Val Ala Ile Ala Leu Val Gly Ile
625 630 635 640

Ala Asn Thr Leu Gly Leu Ser Val Leu Glu Arg Val Arg Glu His Ala
645 650 655

Leu Leu Arg Ala Leu Gly Leu Thr Arg Arg Gln Leu Arg Arg Met Leu
660 665 670

Ala Ala Glu Ala Val Leu Leu Ser Leu Val Ala Ala Val Leu Gly Thr
 675 680 685

Val Ile Gly Ile Gly Phe Ala Trp Val Gly Tyr Glu Thr Phe Val Lys
 690 695 700

Gln Ala Leu Asp Asn Ala Thr Met Gln Val Pro Trp Pro Leu Leu Ala
 705 710 715 720

Val Val Val Leu Val Ala Ala Leu Ala Gly Leu Leu Ala Ser Val Leu
 725 730 735

Pro Ala Arg Arg Ala Val Arg Val Thr Pro Ala Ala Gly Leu Ser Phe
 740 745 750

Glu

<210> 20
 <211> 232
 <212> PRT
 <213> Nonomuria

<400> 20

Met Thr Gly Gln Arg Ala Ala Leu Glu Thr Val Ala Ala Ser Ala Arg
 1 5 10 15

Asn Leu Thr Lys Val Tyr Gly Gln Gly Glu Thr Arg Val His Ala Leu
 20 25 30

Arg Gly Val Asp Leu Asp Leu Pro Arg Gly Lys Phe Thr Ala Ile Met
 35 40 45

Gly Ser Ser Gly Ser Gly Lys Ser Thr Leu Met His Cys Leu Ala Gly
 50 55 60

Leu Asp Gln Ala Ser Asp Gly Thr Val Thr Val Ala Gly Thr Asp Leu
 65 70 75 80

Gly Ser Leu Asp Asp Asn Glu Leu Thr Val Phe Arg Arg Glu His Ile
 85 90 95

Gly Phe Val Phe Gln Ser Phe Asn Leu Leu Pro Met Leu Thr Ala Phe
 100 105 110

Gln Asn Ile Thr Leu Pro Leu Glu Leu Gly Gly Arg Arg Ile Asp Asp
 115 120 125

Ala Ala Thr Glu Arg Val His Val Leu Ala Glu Thr Leu Gly Met Ala
130 135 140

Asp Arg Leu Gly His Arg Pro Ser Glu Met Ser Gly Gly Gln Gln Gln
145 150 155 160

Arg Val Ala Ile Ala Arg Ala Leu Ile Thr Gly Pro Asp Leu Leu Phe
165 170 175

Ala Asp Glu Pro Thr Gly Asn Leu Asp Ser Thr Thr Ser Ala Glu Val
180 185 190

Leu Gly Tyr Leu His Lys Ser Thr Arg Glu Leu Gly Gln Thr Val Val
195 200 205

Met Val Thr His Glu Arg Glu Ala Ala Ala Tyr Ala Asp Gly Val Val
210 215 220

Thr Leu Glu Asp Gly Arg Ile Ala
225 230

<210> 21
<211> 535
<212> PRT
<213> Nonomuria

<400> 21

Met Ser His Ile Thr Met Thr Pro Pro Ser Ala Cys Arg Asp Pro Ala
1 5 10 15

Pro Ala Gly Arg Phe Pro Arg Trp Ala Val Trp Arg Ser Pro Pro Gly
20 25 30

Gln Pro Trp Trp Ala Arg Pro Ala Leu Leu Cys Ile Ala Ala Thr Ala
35 40 45

Ala Val Leu Tyr Ala Trp Asn Leu Pro Leu Val Asp Tyr Ala Pro Arg
50 55 60

Tyr Ser Asp Ala Val Lys Ser Met Ser Glu Asn Trp Lys Ala Phe Leu
65 70 75 80

Tyr Gly Thr Val Asp Val Gln Ala Thr Tyr Thr Leu Asp Lys Leu Ala
85 90 95

Gly Ala Phe Val Pro Gln Ala Ile Ser Val Lys Ile Phe Gly Phe His
100 105 110

Ala Trp Ala Leu Ala Leu Pro Gln Val Ile Glu Gly Val Ile Ser Val
115 120 125

Leu Val Met Tyr Arg Ile Val Arg Arg Trp Ala Gly Val Val Pro Gly
130 135 140

Leu Leu Ala Ala Ala Val Phe Thr Ile Thr Pro Val Ala Ala Ser Met
145 150 155 160

Phe Gly His Ser Met Ala Asp Gly Ala Leu Val Met Cys Leu Val Leu
165 170 175

Ala Val Asp Ser Tyr Gln Arg Ala Val Leu Glu Gly Arg Leu Arg Ser
180 185 190

Leu Val Trp Ala Gly Val Trp Val Gly Leu Gly Phe Gln Ala Lys Met
195 200 205

Leu Gln Ala Trp Met Ile Leu Pro Ala Leu Ala Ile Gly Tyr Leu Leu
210 215 220

Ser Ala Pro Ile Gly Leu Arg Arg Arg Leu Gln His Leu Gly Ile Ala
225 230 235 240

Gly Val Val Thr Leu Val Val Ser Leu Ser Trp Ile Thr Leu Tyr His
245 250 255

Val Thr Pro Ala Ala Asp Arg Pro Tyr Ile Ser Gly Thr Thr Asn Ser
260 265 270

Ser Ala Ala Ala Met Val Phe Gly Tyr Asn Gly Leu Gly Arg Leu Gly
275 280 285

Ile Asn Leu Pro Gly Ala Leu Pro Pro Asn Tyr Met Gly Ser Val Ile
290 295 300

Gly Pro Ala Pro Pro Lys Arg Ser Thr Gln Leu Pro Arg Pro Arg Pro
305 310 315 320

Gly Met Val Ile Pro Glu Ile Gly Ile Glu His Gly Gly Gly Trp Gly
325 330 335

Lys Leu Phe Gly Gly Arg Leu Gly Val Ala Ser Gly Trp Leu Tyr Pro
340 345 350

Leu Ala Leu Met Ala Leu Leu Cys Gly Leu Trp Trp Trp Arg Arg Ala

355

360

365

Glu Arg Thr Asp Pro Ala Arg Gly Gly Met Val Met Trp Gly Val Trp
370 375 380

Leu Leu Thr Phe Ala Leu Pro Tyr Ser Ala Val Phe Val Ile Pro His
385 390 395 400

Ser Ala Tyr Val Ala Val Leu Ala Pro Pro Val Ala Ala Leu Ser Gly
405 410 415

Ile Gly Ile Val Met Phe Trp Arg Ala Tyr Arg Ser Gly Gly Arg Met
420 425 430

Ala Trp Ile Phe Pro Leu Ala Ile Val Ala Glu Leu Ala Trp Ala Val
435 440 445

Trp Leu Trp Ser Phe Tyr Pro Thr Phe Leu Pro Trp Ala Met Trp Gly
450 455 460

Ala Val Ala Leu Gly Val Val Ala Val Val Ala Leu Ala Leu Ala Arg
465 470 475 480

Leu Val Arg Pro Arg Arg Ser Ser Leu Val Ser Ala Gly Leu Thr Ile
485 490 495

Gly Val Ala Ala Met Leu Ala Ala Pro Ala Thr Trp Ser Ala Ser Val
500 505 510

Leu Asp Pro Arg Tyr Gly Gly Ser Ser Phe Asp Ala Asn Ala Gly Pro
515 520 525

Ala Ala Arg Thr Pro Gly Gly
530 535

<210> 22
<211> 270
<212> PRT
<213> Nonomuria

<400> 22

Met Leu Gln Asp Ala Asp Arg Thr Arg Ile Leu Ala Ile Ser Pro His
1 5 10 15

Leu Asp Asp Ala Val Leu Ser Val Gly Ala Ser Leu Ala Gln Ala Glu
20 25 30

Gln Asp Gly Gly Lys Val Thr Val Phe Thr Val Phe Ala Gly Ser Ala

35

40

45

Ala Pro Pro Tyr Ser Pro Ala Ala Glu Arg Phe His Ala Arg Trp Gly
50 55 60

Leu Ser Pro Thr Glu Asp Ala Pro Leu Arg Arg Arg Asn Glu Asp Ile
65 70 75 80

Ala Ala Leu Asp Gln Leu Gly Ala Gly His Arg His Gly Arg Phe Leu
85 90 95

Asp Ala Ile Tyr Arg Arg Ser Pro Asp Gly Gln Trp Leu Leu His His
100 105 110

Asn Glu Gly Ser Met Val Arg Gln Gln Ser Pro Ala Asn Asn His Asp
115 120 125

Leu Val Ala Ala Ile Arg Glu Asp Ile Glu Ser Met Ile Ala Glu Cys
130 135 140

Asp Pro Thr Leu Val Leu Thr Cys Val Ala Ile Gly Lys His Pro Asp
145 150 155 160

His Lys Ala Thr Arg Asp Ala Thr Leu Leu Ala Ala Arg Glu Arg Gly
165 170 175

Ile Pro Leu Arg Leu Trp Gln Asp Leu Pro Tyr Ala Ala Tyr Ser Gln
180 185 190

Asp Leu Ala Glu Leu Pro Asp Gly Leu Arg Leu Gly Ser Pro Glu Leu
195 200 205

Ser Phe Val Asp Glu Glu Ala Arg Thr Arg Lys Phe Gln Ala Met Lys
210 215 220

His Tyr Ala Thr Gln Leu Ser Val Leu Asp Gly Pro Asn Lys Asn Leu
225 230 235 240

Phe Ala Lys Leu Asp Glu His Ala Arg Asn Ala Ala Pro Asp Gly Gly

Tyr Asn Glu Thr Thr Trp Pro Val Ile Arg Tyr Ala Ala Glu
260 265 270

<210> 23
<211> 420
<212> PRT
<213> Nonomuria

<400> 23

Met Ala His Arg Leu Arg Arg Leu Thr Thr Ala Phe Arg Ser Val Arg
1 5 10 15

Leu Arg Leu Thr Leu Val Tyr Gly Ala Leu Phe Ala Ala Ser Gly Val
20 25 30

Val Leu Leu Ala Ile Thr Tyr Leu Leu Phe Arg Gly Ser Arg Pro Phe
35 40 45

Val Leu Val Asp Gly Asp Pro Gly Gly Arg Phe Arg Ala Phe Ala Arg
50 55 60

Gln Gln Gln Ala Ala Ile Leu Glu Asn Leu Leu Phe Gln Ser Leu Ile
65 70 75 80

Ala Leu Ala Leu Met Thr Val Ile Ser Phe Leu Leu Gly Trp Leu Val
85 90 95

Ala Gly Arg Met Leu Arg Pro Leu Arg Thr Met Asn Thr Thr Leu Lys
100 105 110

Arg Ile Ser Ala Arg Asn Val His Glu Arg Leu Ala Leu Pro Gly Pro
115 120 125

Arg Asp Glu Leu Arg Asn Leu Ala Asp Thr Val Asp Glu Leu Leu Glu
130 135 140

Arg Leu His Ser Ala Leu Asp Ala Gln Lys Arg Phe Val Ala Asn Ala
145 150 155 160

Ala His Glu Leu Arg Thr Pro Leu Thr Leu Glu His Ala Leu Leu Glu
165 170 175

Glu Ser Leu Leu His Arg Asp Ala Asp Thr Pro Ser Met Arg Ser Ile
180 185 190

Met Glu Arg Leu Leu Asp Leu Ser Arg Gln Gln Gly Arg Leu Leu Glu
195 200 205

Ser Leu Leu Thr Leu Ala Lys Ser Glu Gly Gly Leu Asp His Arg Glu
210 215 220

Pro Leu Asp Leu Ala Glu Ile Ala Glu His Thr Ile Arg Thr Met Glu
225 230 235 240

Gly Thr Gly Pro Gly Ala Asp Gly Asn Asn Pro Arg Ala Gly Val Ser

245

250

255

Ala Asp Arg Arg Ala Asp Gly Asn Ser Pro Thr Ala Gly Ala Ala Thr
260 265 270

Asp Ser Trp Ala Asp Gly Lys Ser Leu Arg Ala Gly Cys Pro His Pro
275 280 285

Arg Leu Val Thr Gly Ile Ala His Ala Pro Thr Thr Gly Asp Pro Ala
290 295 300

Leu Val Glu Arg Leu Ile Thr Asn Leu Leu Asp Asn Ala Met Arg Tyr
305 310 315 320

Asn Val Pro Gly Gly Gln Val Glu Leu Ser Thr Arg Ala Glu Ala Gly
325 330 335

Lys Ala Val Val Ser Ile Ala Asn Thr Gly Pro Val Val Pro Pro Glu
340 345 350

Gln Val His Arg Leu Phe Glu Pro Phe Gln Arg Leu Asp Arg Thr Arg
355 360 365

Ala Asp Asp His His Gly Leu Gly Leu Ser Ile Val Arg Ala Ile Ala
370 375 380

Val Ala His Asp Ala Thr Leu Thr Ala His Ala Arg Pro Gln Gly Gly
385 390 395 400

Leu Ser Val Glu Ile His Phe Pro Leu Met Arg Arg Ala Leu Arg Arg
405 410 415

Leu Ala Pro Ser
420

<210> 24
<211> 709
<212> PRT
<213> Nonomuria

<400> 24

Met Ser Leu Pro Thr Cys Ala Cys Gly Leu Thr Pro His Ala Pro Ser
1 5 10 15

Cys Ala Pro Arg Ser Glu His Ala Gly Gly Arg Ser Ser Glu Ser Arg
20 25 30

Thr Asp Ile Gln Gly Leu Arg Ala Ile Ala Val Ala Ala Val Val Ala

35

40

45

Phe His Leu Trp Pro Gly Gly Pro Thr Gly Gly Tyr Val Gly Val Asp
50 55 60

Val Phe Phe Val Ile Ser Gly Tyr Leu Ile Thr Ser His Leu Leu Arg
65 70 75 80

Gln Pro Gly His Gly Gly Gly Arg Leu Leu Asp Phe Trp Ala Arg Arg
85 90 95

Val Arg Arg Leu Ile Pro Ala Ala Ser Leu Ala Leu Leu Val Thr Leu
100 105 110

115

120

125

Arg Glu Val Ile Ala Ala Thr Val Tyr Val Glu Asn Leu Arg Leu Ala
130 135 140

Leu Thr Gln Ala Asn Tyr Leu Asp Val Asp Gln Pro Asp Trp Pro Ala
145 150 155 160

Gln His Tyr Trp Ser Leu Ser Ile Glu Glu Gln Phe Tyr Leu Gly Trp
165 170 175

Pro Leu Leu Leu Gly Ser Ala Ala Trp Leu Ala Ala Arg Val Ala Arg
180 185 190

Gly Arg Arg Pro Pro Glu Asn Phe Thr Arg Trp Ser Ala Val Val Val
195 200 205

Thr Gly Ala Val Val Ala Ala Ser Leu Ala Trp Ser Val Gln Lys Thr
210 215 220

Ala Thr Asp Pro Ala Ala Ala Tyr Phe Val Ser Thr Thr Arg Phe Trp
225 230 235 240

Glu Leu Ala Leu Gly Gly Leu Leu Ala Ala Val Leu Thr Val Arg Ala
245 250 255

Met Pro Arg Ala Arg Ala Val Arg Ala Gly Leu Ala Trp Ala Gly Leu
260 265 270

Gly Met Ile Gly Trp Ala Val Val Arg Phe Asp Ala Glu Thr Ala Phe
275 280 285

Pro Gly Ala Ala Ala Leu Val Pro Thr Val Gly Ala Cys Leu Val Ile

290

295

300

Ala Ala Ala Ala Asp Gly Leu Arg Gly Gly Pro Gly Arg Ala Leu Ala
305 310 315 320

Trp Arg Pro Val Gln Trp Leu Gly Asn Ala Ser Tyr Ala Val Tyr Leu
325 330 335

Trp His Trp Pro Pro Ile Met Ile Leu Pro Tyr Ala Leu Gly Arg Ser
340 345 350

Leu Thr Val Ile Glu Ser Val Gly Val Ile Ala Leu Thr Leu Val Leu
355 360 365

Ala Ala Leu Ser Gln Tyr Leu Val Glu Asp Arg Leu Arg Trp His Pro
370 375 380

Val Leu Val Arg Ser Arg Arg Leu Thr Phe Ala Met Leu Ala Ser Cys
385 390 395 400

Val Val Val Val Ala Gly Ala Gly Ala Gly Val Val Ala Tyr Ala Asp
405 410 415

Ala Ala Glu Arg Thr Glu Ser Ala Ala Phe Glu Ala Ala Ala Ser Arg
420 425 430

Ala Gly Ser Cys Leu Gly Ala Gly Val Val Arg Asp Pro Ala Cys Gln
435 440 445

Asp Leu Gly Leu Leu Met Pro Pro Gln Val Ala Leu Lys Asp Lys Pro
450 455 460

Ala Val Tyr Ala Asp Gly Cys Val Asn Lys Glu Pro Phe Ile Ala Arg
465 470 475 480

Asn Thr Cys Thr Tyr Gly Pro Asp Ala Ala Gly Arg Arg Ile Ala Leu
485 490 495

Val Gly Asn Ser His Ala Gly His Trp Val Pro Ala Leu Glu Lys Ala
500 505 510

Leu Trp Ser Glu Arg Trp Gln Leu Thr Thr Tyr Val Gln Leu Ala Cys
515 520 525

Tyr Thr Val Asp Gln Pro Leu Val Leu Glu Gly Ala Gly Val Ser Glu
530 535 540

103/138

Asn Cys Gln Lys Ile Asn Lys Trp Ala Val Gly Ser Ile Val Asn Gly
545 550 555 560

Gly Tyr Asp Leu Val Ile Met Ser Asn Arg Thr His Val Pro Leu Ala
565 570 575

Gly Val Ser Pro Ala Gly Gln Gln Ala Ala Ala Glu Arg Ala Tyr Arg
580 585 590

Asp Thr Leu Arg Ala Phe Thr Gly Ala Gly Leu Pro Val Leu Val Leu
595 600 605

Arg Asp Thr Pro Ala Met Pro Asp Ser Val Pro His Cys Ile Ala Lys
610 615 620

625 630 635 640

Arg Pro Asp Pro Leu Ala Ala Ala Ala Arg Ala Asp Asp Thr Gly Leu
645 650 655

Val Ser Val Ala Ser Val Asp His Leu Val Cys Gly Glu Arg Cys Gly
660 665 670

Pro Val Ile Gly Gly Leu Ile Ala Tyr Ser Asp Arg Ser His Leu Thr
675 680 685

Thr Thr Phe Ala Arg Thr Leu Ala Pro Glu Val Thr Ala Ala Val Arg
690 695 700

Gly Ala Leu Thr Arg
705

<210> 25
<211> 648
<212> PRT
<213> Nonomuria

<400> 25

Met Ala Ile Val Ser Pro Phe Gly Gly Leu Leu Lys Gly Asp Gly Glu
1 5 10 15

Asp Asp Pro Ala Pro Ser Arg Ile Arg Pro Gly Thr Leu Arg Arg Val
20 25 30

Leu Gly Tyr Phe Arg Pro His Val Gly Lys Val Ala Leu Phe Val Leu
35 40 45

Val Thr Ala Leu Asp Ser Ile Phe Val Val Ala Ser Pro Leu Met Leu

50

55

60

Lys Asp Leu Val Asp Lys Gly Val Leu Gly Asn Asp Leu Glu Leu Val
65 70 75 80

Ile Leu Leu Ala Cys Leu Ala Ala Gly Phe Ala Val Met Ser Thr Leu
85 90 95

Leu Gln Leu Val Ser Ala Tyr Ile Ser Gly Arg Ile Gly Gln Gly Val
100 105 110

Ser Tyr Asp Leu Arg Val Gln Ala Leu Asp His Val Gln Arg Leu Pro
115 120 125

Ile Ala Phe Phe Thr Arg Thr Gln Thr Gly Val Leu Val Gly Arg Leu
130 135 140

His Thr Glu Leu Val Met Thr Gln Met Ala Phe Thr Gln Met Leu Thr
145 150 155 160

Ala Ala Ala Ser Ala Val Thr Val Leu Leu Val Leu Ala Glu Leu Phe
165 170 175

Tyr Leu Ser Trp Ile Val Ala Leu Leu Thr Leu Val Leu Ile Pro Val
180 185 190

Phe Leu Val Pro Trp Ser Tyr Val Gly Arg Arg Met Gln Arg Tyr Thr
195 200 205

Arg Gly Leu Met Glu Glu Asn Ala Gly Leu Ala Gly Leu Leu Gln Glu
210 215 220

Arg Phe Asn Val Gln Gly Ala Met Leu Ser Lys Leu Phe Gly Arg Pro
225 230 235 240

Ala Glu Glu Met Ala Glu Tyr Glu Ser Arg Ala Gly Arg Ile Arg Gly
245 250 255

Leu Ala Val Ser Val Thr Leu Tyr Gly Arg Met Ala Pro Ala Ile Phe
260 265 270

Ala Leu Met Ala Ala Leu Ala Thr Ala Leu Val Tyr Gly Val Gly Gly
275 280 285

Gly Leu Val Leu Ser Gln Ala Phe Gln Leu Gly Thr Leu Val Ala Leu
290 295 300

Ala Thr Leu Leu Gly Arg Leu Phe Gly Pro Ile Thr Gln Leu Ala Ser
305 310 315 320

Ile Gln Glu Asn Ala Leu Thr Val Leu Val Ser Phe Glu Arg Ile Phe
325 330 335

Glu Leu Leu Asp Leu Lys Pro Leu Ile Glu Glu Arg Pro Asp Ala Val
340 345 350

Ala Leu Lys Ala Gly Lys Ala Ser Asp Val Gln Phe Glu Asn Val Ser
355 360 365

Phe Arg Tyr Pro Ser Ala Asp Glu Val Ser Leu Pro Ser Leu Glu Gln
370 375 380

Asn Val Arg Thr Gly Gln Glu Arg Gly Glu Ala Thr Pro Glu Val Leu
385 390 395 400

Arg Asp Val Ser Leu His Val Pro Ala Gly Thr Leu Thr Ala Leu Val
405 410 415

Gly Pro Ser Gly Ala Gly Lys Ser Thr Leu Thr His Leu Val Ser Arg
420 425 430

Leu Tyr Asp Pro Thr Ser Gly Thr Val Arg Val Gly Gly His Asp Leu
435 440 445

Arg Asp Leu Thr Phe Asp Ser Leu Arg Glu Thr Val Gly Val Val Ser
450 455 460

Gln Asp Thr Tyr Leu Phe His Asp Thr Ile Arg Ala Asn Leu Leu Tyr
465 470 475 480

Ala Arg Pro Asp Ala Thr Glu Asp Glu Leu Val Glu Ala Cys Arg Gly
485 490 495

Ala Gln Ile Trp Asp Leu Ile Ala Ser Leu Pro Arg Gly Leu Asp Thr
500 505 510

Val Val Gly Asp Arg Gly Tyr Arg Leu Ser Gly Gly Glu Lys Gln Arg
515 520 525

Leu Ala Ile Ala Arg Leu Leu Leu Lys Ala Pro Ser Val Val Val Leu
530 535 540

Asp Glu Ala Thr Ala His Leu Asp Ser Glu Ser Glu Ala Ala Val Gln
545 550 555 560

Arg Ala Leu Thr Thr Ala Leu Arg Ser Arg Thr Ser Leu Val Ile Ala
 565 570 575

His Arg Leu Ser Thr Ile Arg Glu Ala Asp His Ile Leu Val Ile Asp
 580 585 590

Asp Gly Arg Val Arg Glu Arg Gly Thr His Glu Glu Leu Leu Ala Glu
 595 600 605

Gly Gly Leu Tyr Ala Asp Leu Tyr His Thr Gln Phe Ala Lys Ser Gly
 610 615 620

Val Asn Gly Thr Arg Pro Gly Gln Gly Asp Gly Ala Glu Pro Val Gln
 625 630 635 640

Glu Val Val Gly Gly Gly Glu Arg
 645

<210> 26
 <211> 2097
 <212> PRT
 <213> Nonomuria

<400> 26

Met Ser Ala Gly Thr Arg Ala Thr Pro Thr Thr Val Leu Asp Leu Phe
 1 5 10 15

Ala Arg Gln Val Gly Arg Ala Pro Asp Ala Val Ala Leu Val Asp Gly
 20 25 30

Asp Arg Val Leu Thr Tyr Arg Arg Leu Asp Glu Leu Ala Gly Ala Leu
 35 40 45

Ser Gly Arg Leu Ile Gly Arg Gly Val Gly Arg Gly Asp Arg Val Ala
 50 55 60

Val Met Met Asp Arg Ser Ala Asp Leu Val Val Thr Leu Leu Ala Val
 65 70 75 80

Trp Gln Ala Gly Ala Ala Tyr Val Pro Val Asp Ala Ala Leu Pro Ala
 85 90 95

Arg Arg Val Ala Phe Met Val Ala Asp Ser Gly Ala Cys Leu Met Val
 100 105 110

Cys Ser Glu Ala Thr Arg Asp Ala Val Pro Gln Gly Val Glu Ser Ile
 115 120 125

Ala Leu Thr Gly Glu Gly Gly Cys Gly Thr Ser Ala Val Thr Val Asp
130 135 140

Pro Gly Asp Leu Ala Tyr Val Met Tyr Thr Ser Gly Ser Thr Gly Thr
145 150 155 160

Pro Lys Gly Val Ala Val Pro His Arg Ser Val Ala Glu Leu Thr Gly
165 170 175

Asn Pro Gly Trp Gly Val Glu Pro Gly Glu Ala Val Leu Met His Ala
180 185 190

Pro Tyr Thr Phe Asp Ala Ser Leu Phe Glu Ile Trp Val Pro Leu Val
195 200 205

Ser Gly Ala Arg Val Val Ile Ala Ala Pro Gly Ala Val Asp Ala Arg
210 215 220

Arg Leu Arg Glu Ala Val Ala Ala Gly Val Thr Arg Val His Leu Thr
225 230 235 240

Ala Gly Ser Phe Arg Ala Val Ala Glu Glu Ser Pro Glu Ser Phe Ala
245 250 255

His Phe Arg Glu Val Leu Thr Gly Gly Asp Val Val Pro Ala Tyr Ala
260 265 270

Val Gln Lys Val Arg Ala Ala Cys Pro His Val Arg Ile Arg His Leu
275 280 285

Tyr Gly Pro Thr Glu Thr Thr Leu Cys Ala Thr Trp Gln Leu Leu Glu
290 295 300

Pro Gly Asp Val Val Gly Pro Val Leu Pro Ile Gly Arg Pro Leu Pro
305 310 315 320

Gly Arg Arg Ala Trp Val Leu Asp Ala Ser Leu Arg Pro Val Glu Pro
325 330 335

Gly Val Val Gly Asp Leu Tyr Leu Ser Gly Ala Gly Leu Ala Asp Gly
340 345 350

Tyr Leu Asp Arg Ala Gly Leu Thr Ala Glu Arg Phe Val Ala Asp Pro
355 360 365

Ser Ala Ala Gly Arg Arg Met Tyr Arg Thr Gly Asp Leu Ala Gln Trp
370 375 380

Thr Ala Asp Gly Glu Leu Leu Phe Ala Gly Arg Ala Asp Asp Gln Val
385 390 395 400

Lys Val Arg Gly Phe Arg Ile Glu Pro Gly Glu Val Glu Ala Ala Leu
405 410 415

Thr Ala Gln Pro His Val Arg Glu Ala Val Val Val Ala Ile Asp Gly
420 425 430

Arg Leu Ile Gly Tyr Val Val Ala Asp Gly Asp Val Asp Pro Val Leu
435 440 445

Met Arg Arg Arg Leu Ala Ala Ser Leu Pro Glu Tyr Met Ile Pro Ala
450 455 460

Ala Leu Val Thr Leu Asp Ala Leu Pro Leu Thr Gly Ser Gly Lys Val
465 470 475 480

Asp Arg Arg Ala Leu Pro Glu Pro Asp Phe Ala Ser Ala Ala Pro Arg
485 490 495

Arg Glu Pro Gly Thr Glu Pro Glu Arg Val Leu Cys Asp Leu Phe Ala
500 505 510

Glu Leu Leu Gln Pro Glu Gly Arg Gly Val Gly Val Asp Asp Gly Phe
515 520 525

Val Glu Leu Gly Gly Asp Ser Ile Val Ala Ile Arg Leu Ala Ala Arg
530 535 540

Ala Ser Arg Val Gly Leu Leu Val Thr Pro Ala Gln Ile Phe Lys Glu
545 550 555 560

Lys Thr Pro Ala Arg Leu Ala Ala Val Ala Gly Ala Val Pro Ala Gly
565 570 575

Arg Pro Ala Asp Gly Pro Leu Ile Thr Leu Thr Ala Glu Glu Glu Ala
580 585 590

Glu Leu Ala Thr Ala Val Pro Gly Ala Glu Glu Val Trp Pro Leu Ala
595 600 605

Pro Leu Gln Glu Gly Leu Tyr Phe Gln Ala Thr Leu Asp Asp Glu Gly
610 615 620

His Asp Ile Tyr Gln Ala Gln Trp Ile Leu Glu Leu Ala Gly Pro Leu

625	630	635	640
Asp Ala Ala Arg Leu Arg Ala Ser Trp Glu Ala Val Phe Ala Arg His	645	650	655
Pro Glu Leu Arg Val Ser Phe His Arg Arg Ala Ser Gly Thr Met Leu	660	665	670
Gln Val Val Ala Gly His Val Val Leu Pro Trp Arg Glu Val Asp Leu	675	680	685
Ala Asp Ala Gly Asp Ile Asp Ala Ala Val Ala Ala Leu Ile Ser Glu	690	695	700
Glu Gln Glu Gln Arg Phe Asp Leu Ala Lys Ala Pro Leu Phe Arg Leu	705	710	715
Val Leu Val Arg His Gly Glu Asp Arg His Arg Leu Leu Val Val His	725	730	735
His His Ile Leu Thr Asp Gly Trp Ser Val Ala Val Ile Leu Asn Glu	740	745	750
Val Ala Glu Ala Tyr Thr Asn Gly Gly Arg Leu Pro Asp Arg Thr Gly	755	760	765
Ala Ala Ser Tyr Arg Asp Tyr Leu Ala Trp Leu Asp Arg Gln Asp Lys	770	775	780
Asp Ala Ala Arg Ala Ala Trp Gln Ala Glu Leu Ser Gly Leu Glu Gly	785	790	795
Pro Ala Pro Ile Ala Lys Ala Ala Thr Thr Thr Gly Ala Gly Thr Gly	805	810	815
Tyr Glu Tyr Arg Ile Ala Phe Leu Thr Pro Asp Leu His Thr Arg Leu	820	825	830
Thr Glu Leu Ala Arg Asp His Gly Leu Thr Leu Asn Thr Leu Ala Gln	835	840	845
Gly Ala Trp Ala Met Val Leu Ala Arg Leu Ala Arg Arg Thr Asp Val	850	855	860
Val Phe Gly Thr Thr Val Ala Cys Arg Pro Ala Glu Leu Pro Glu Val	865	870	875
			880

Glu Ser Val Pro Gly Leu Met Met Asn Thr Val Pro Val Arg Val Pro
885 890 895

Leu Gln Gly Ala Gln Ser Val Val Asp Leu Leu Thr Gly Leu Gln Glu
900 905 910

Arg Gln Ala Ala Leu Leu Pro His Gln His Leu Gly Leu Thr Glu Ile
915 920 925

Gln Arg Ala Ala Gly Pro Gly Ala Thr Phe Asp Thr Leu Leu Val Phe
930 935 940

Glu Asn Tyr Pro Arg Asp Phe Ala Gly Gln Phe Thr Tyr Leu Gly Thr
945 950 955 960

Ile Glu Gly Thr His Tyr Pro Leu Thr Leu Gly Ile Ile Pro Gly Asp
965 970 975

His Phe Arg Ile Gln Leu Val Tyr Arg Arg Gly Gln Val Gly Glu Ser
980 985 990

Val Ala Glu Ser Ile Leu Gly Trp Phe Thr Gly Ala Leu Met Thr Met
995 1000 1005

Ala Ala Asp Pro His Gly Pro Val Gly Arg Ile Gly Val Gly Glu
1010 1015 1020

Ala Arg Ala Gly Gly Ser Asp Arg Ala Met Ala Ala Gly Glu Pro
1025 1030 1035

Leu Pro Val Leu Leu Arg Arg Val Val Lys Asp Arg Pro Asp Glu
1040 1045 1050

1055 1060 1065

Trp Glu Arg Ala Thr Ala Leu Ala Ala Glu Leu Arg Ala His Gly
1070 1075 1080

Ile Gly Pro Glu Ser Arg Val Ala Val Met Val Gly Arg Ser Ala
1085 1090 1095

Trp Trp Ala Val Gly Val Leu Gly Val Cys Leu Ala Gly Gly Ala
1100 1105 1110

Phe Met Pro Val Asp Pro Ala Tyr Pro Ala Glu Arg Val Arg Trp
1115 1120 1125

Ile Leu Ala Asp Ser Asp Pro Arg Leu Val Leu Cys Ala Gly Thr
1130 1135 1140

Thr Arg Glu Ala Val Pro Glu Glu Phe Ala Asp Arg Leu Val Val
1145 1150 1155

Val Asp Glu Leu Asp Leu Ala Gly Ser Asp Asp Ala Gly Leu Pro
1160 1165 1170

Arg Val Ser Pro Asp Asp Ala Ala Tyr Val Ile Tyr Thr Ser Gly
1175 1180 1185

Ser Thr Gly Thr Pro Lys Gly Val Val Val Ser His Ala Gly Leu
1190 1195 1200

Gly Asn Leu Ala Met Ala Gln Ile Asp Arg Phe Ala Val Ser Pro
1205 1210 1215

Ser Ser Arg Val Leu Gln Phe Ala Ala Leu Gly Phe Asp Ala Met
1220 1225 1230

Val Ser Glu Met Leu Met Ala Leu Leu Ser Gly Ala Arg Leu Val
1235 1240 1245

Met Ala Pro Glu Pro Ala Leu Pro Pro Arg Val Ser Leu Ala Glu
1250 1255 1260

Ala Leu Arg Arg Trp Glu Val Thr His Val Thr Val Pro Pro Ser
1265 1270 1275

Val Leu Ala Thr Ala Asp Ala Leu Pro Ala Gly Leu Glu Thr Val
1280 1285 1290

Val Val Ala Gly Glu Ala Cys Pro Pro Gly Leu Ala Glu Arg Trp
1295 1300 1305

Ser Ala Gly Arg Arg Leu Val Asn Ala Tyr Gly Pro Thr Glu Ala
1310 1315 1320

Thr Val Cys Ala Ala Met Ser Arg Pro Leu Thr Gly Ser Arg Glu
1325 1330 1335

Val Val Pro Ile Gly Thr Pro Ile Ala Gly Gly Arg Cys Tyr Val
1340 1345 1350

Leu Asp Ala Phe Leu Arg Pro Leu Pro Pro Gly Ile Thr Gly Glu
1355 1360 1365

Leu Tyr Val Ala Gly Ile Gly Leu Ala Arg Gly Tyr Leu Gly Arg
1370 1375 1380

Ala Ser Leu Thr Ala Glu Arg Phe Val Ala Asp Pro Phe Val Ala
1385 1390 1395

Gly Glu Arg Met Tyr Arg Thr Gly Asp Leu Ala Tyr Trp Thr Gly
1400 1405 1410

Glu Gly Glu Leu Val Phe Ala Gly Arg Asp Asp Asp Gln Val Lys
1415 1420 1425

Ile Arg Gly Tyr Arg Val Glu Pro Gly Glu Val Glu Ala Val Leu
1430 1435 1440

Ala Gly Gln Pro Gly Val Asp Gln Ala Val Val Val Ala Arg Glu
1445 1450 1455

Gly Arg Leu Leu Gly Tyr Val Val Ser Gly Gly Gly Val Asp Pro
1460 1465 1470

Val Arg Leu Arg Glu Gly Val Ala Arg Val Leu Pro Glu Tyr Met
1475 1480 1485

Val Pro Ala Ala Val Val Val Leu Gly Ala Val Pro Val Thr Ala
1490 1495 1500

Asn Gly Lys Val Asp Arg Glu Ala Leu Pro Asp Pro Gly Phe Gly
1505 1510 1515

Gly Arg Val Ser Gly Arg Glu Pro Arg Thr Glu Val Glu Arg Ala
1520 1525 1530

Leu Cys Gly Leu Phe Ala Glu Val Leu Gly Leu Pro Gly Val Thr
1535 1540 1545

Ala Val Gly Pro Asp Asp Ser Phe Phe Glu Leu Gly Gly Asp Ser
1550 1555 1560

Ile Thr Ser Met Gln Leu Ala Ser Arg Ala Arg Arg Glu Gly Met
1565 1570 1575

Leu Phe Gly Ala Arg Glu Val Phe Glu Arg Lys Thr Pro Ala Gly
1580 1585 1590

Leu Ala Ala Ile Val Asp Val Gly Gly Glu Leu Ala Ala Gly Pro
1595 1600 1605

Ala Asp Gly Val Gly Glu Ile Ala Trp Thr Pro Ile Met Arg Ala
1610 1615 1620

Leu Gly Asp Gly Ile Val Gly Ser Arg Phe Ala Gln Trp Val Val
1625 1630 1635

Leu Gly Ala Pro Pro Asp Leu Arg Ala Asp Val Val Ala Ala Gly
1640 1645 1650

Leu Ala Ala Val Val Asp Thr His Asp Val Leu Arg Leu Arg Val
1655 1660 1665

Val Asp Asp Arg Ala Gly Arg Arg Leu Ala Val Gly Glu Arg Gly
1670 1675 1680

Ser Val Asp Thr Ala Gly Leu Val Thr Arg Leu Glu Cys Gly Gly
1685 1690 1695

Arg Pro Pro Asp Glu Val Val Glu Arg Ala Val Arg Glu Ala Val
1700 1705 1710

Gly Arg Leu Asp Pro Val Ala Gly Val Met Ala Gln Ala Val Trp
1715 1720 1725

Val Asp Ala Gly Pro Ala Arg Thr Gly Arg Leu Val Val Val Val
1730 1735 1740

His His Leu Ala Val Asp Gly Met Ser Trp Arg Ile Leu Val Pro
1745 1750 1755

Asp Leu Arg Leu Ala Cys Glu Ala Val Ala Glu Gly Arg Asp Pro
1760 1765 1770

Val Leu Glu Pro Val Trp Gly Ser Phe Arg Arg Trp Ala Ala Leu
1775 1780 1785

Leu Glu Glu Ser Ala Leu Ser Arg Glu Arg Val Gly Glu Leu His
1790 1795 1800

Thr Trp Arg Thr Ile Val Asp Gln Glu Asp Arg Pro Val Gly Arg
1805 1810 1815

Arg Arg Leu Ser Ala Gly Asp Ala Ala Gly Gly Val Arg Ser Arg
1820 1825 1830

Ser Trp Val Met Ser Gly Asp Glu Ala Ser Leu Leu Val Gly Lys

1835

1840

1845

Val Pro Val Ala Phe His Cys Gly Val His Glu Val Leu Leu Ala
1850 1855 1860

Gly Leu Ala Gly Ala Val Ala Arg Trp His Gly Asp Asp Gly Val
1865 1870 1875

Leu Val Asp Val Glu Gly His Gly Arg His Pro Ala Glu Gly Met
1880 1885 1890

Asp Leu Ser Arg Thr Val Gly Trp Phe Thr Ser Met His Pro Val
1895 1900 1905

Arg Leu Asp Val Ala Gly Ile Glu Leu Ala Ala Val Pro Ala Gly
1910 1915 1920

Gly Arg Ala Ala Gly Gln Leu Leu Lys Ala Val Lys Glu Gln Ser
1925 1930 1935

Arg Ala Ala Pro Gly Asp Gly Leu Gly Tyr Gly Leu Leu Arg His
1940 1945 1950

Leu Asn Pro Glu Thr Gly Pro Val Leu Ala Ala Leu Pro Ser Pro
1955 1960 1965

Gln Ile Gly Phe Asn Tyr Met Gly Arg Phe Val Thr Val Asp Gln
1970 1975 1980

Gly Gly Ala Arg Pro Trp Gln Pro Val Gly Gly Ile Gly Gly Ser
1985 1990 1995

Leu Asp Pro Gly Met Gly Leu Pro His Ala Leu Glu Val Asn Ala
2000 2005 2010

Ile Val His Asp Arg Leu Ala Gly Pro Glu Leu Val Leu Thr Val
2015 2020 2025

Asp Trp Arg Asp Asp Leu Leu Glu Glu Thr Asp Ile Glu Arg Leu
2030 2035 2040

Cys Gln Val Trp Leu Asp Met Leu Ser Gly Leu Ser Arg Gln Ala
2045 2050 2055

Glu Asp Pro Ser Ala Gly Gly His Thr Ala Ser Asp Phe Ala Leu
2060 2065 2070

115/138

Leu Asp Leu Asp Gln Asp Glu Ile Glu Gly Phe Glu Ala Ile Ala
 2075 2080 2085

Ala Glu Leu Ser Gly Gly Gln Thr Ser
 2090 2095

<210> 27
 <211> 1063
 <212> PRT
 <213> Nonomuria

<400> 27

Met Asn Thr Pro Ser Thr Pro Ala Gly Ser Ala Leu Glu Glu Val Trp
 1 5 10 15

Pro Leu Ser Pro Met Gln Glu Gly Ile Leu Tyr His Ala Ala Leu Asp
 20 25 30

Glu Ala Pro Asp Leu Tyr Leu Ile Gln Gln Ser Gln Ile Ile Glu Gly
 35 40 45

Pro Leu Asp Thr Glu Arg Phe Arg Leu Ala Trp Glu Ser Leu Leu Asn
 50 55 60

Arg His Ala Ala Leu Arg Ala Cys Phe His Arg Arg Lys Ser Gly Glu
 65 70 75 80

Ser Val Gln Leu Ile Pro Arg Lys Val Pro Leu Pro Trp Ser Glu Arg
 85 90 95

Asp Leu Ser Gly Leu Ser Glu Glu Asp Ala Leu Ala Glu Ala Ser Val
 100 105 110

Ile Ala Glu Lys Glu Arg Ala Thr Arg Phe Asp Pro Ala Lys Pro Pro
 115 120 125

Leu Leu Arg Gln Val Leu Ile Arg Phe Gly Pro Asp Lys His Cys Leu
 130 135 140

Val Thr Thr Ser His His Leu Val Met Asp Gly Trp Ser Arg Ala Ile
 145 150 155 160

Leu Glu Ser Glu Leu Leu Glu Leu Tyr Ala Ala Gly Gly Ala Glu Pro
 165 170 175

Gly Leu Arg Pro Ala Gly Ser Tyr Arg Asp Tyr Leu Ala Trp Leu Glu
 180 185 190

Arg Gln Asp Lys Glu Ala Ala Arg Ala Ala Trp Arg Ala Glu Leu Ala
195 200 205

Gly Ala Asp Arg Ser Thr Leu Gly Ile Pro Glu Ala Ser Arg Lys Thr
210 215 220

Gln Gly Gln Arg Val Arg Glu Val Leu Gly Tyr Ala Pro Asp Phe Thr
225 230 235 240

Ser Ala Leu Val Asp Phe Ala Arg Arg His Gly Leu Thr Leu Asn Thr
245 250 255

Leu Val Gln Gly Ala Trp Ala Leu Val Leu Ala Arg Leu Thr Arg Arg
260 265 270

Arg Asp Val Val Phe Gly Ala Val Val Ser Gly Arg Pro Ala Glu Val
275 280 285

Pro Gly Val Glu Gln Ala Val Gly Leu Phe Ile Asn Thr Val Pro Val
290 295 300

Arg Val Arg Leu Asp Gly Gly Gln Pro Val Ile Gln Leu Leu Thr Glu
305 310 315 320

Leu Gln Glu Arg Gln Ser Thr Leu Ile Ser His Gln His Leu Gly Leu
325 330 335

Gln Glu Ile Gln Lys Leu Ser Gly Val Ser Phe Asp Thr Val Val Ser
340 345 350

Phe Glu Asn Tyr Val Asp Pro Gly Ala Gly Pro Gly Ser Asp Arg Glu
355 360 365

Leu Arg Leu Arg Leu Lys Glu Phe His Gln Ser Ala Pro Tyr Ala Leu
370 375 380

Leu Leu Gly Ile Met Pro Gly Glu Ser Leu Gln Thr Asp Val Glu Tyr
385 390 395 400

Arg Pro Glu Leu Leu Asp Ala Arg Val Ala Lys Glu Ala Leu His Gly
405 410 415

Leu Ala Arg Val Leu Glu Arg Met Ile Ala Glu Pro Glu Thr Ala Val
420 425 430

Gly Arg Leu Asp Val Val Gly Asp Ala Gly Arg Glu Leu Val Val Glu
435 440 445

Arg Trp Asn Glu Thr Gly Asp Ala Ile Gly Ala Pro Ser Ala Val Asp
450 455 460

Leu Phe Arg Arg Gln Val Ala Arg Ala Pro Ala Ala Thr Ala Val Thr
465 470 475 480

Ala Gly Asp Leu Ala Trp Ser Tyr Ala Glu Leu Asp Glu Arg Ser Gly
485 490 495

Arg Leu Ala Arg Ala Leu Thr Glu Arg Gly Val Arg Arg Gly Asp Arg
500 505 510

Val Gly Val Val Leu Gly Arg Ser Ala Glu Val Leu Ala Ala Trp Leu
515 520 525

Gly Val Trp Lys Ala Gly Ala Ala Phe Val Pro Val Asp Pro Asp Tyr
530 535 540

Pro Ala Asp Arg Val Ala Phe Met Leu Ala Asp Ser Ala Val Ala Met
545 550 555 560

Val Val Cys Gln Glu Ala Thr Ser Gly Val Val Pro Pro Gly Tyr Gln
565 570 575

Gln Leu Leu Val Asn Asp Ala Asp Asp Gly Glu Ala Ala Leu Val Pro
580 585 590

Ile Gly Ala Asp Asp Leu Ala Tyr Val Met Tyr Thr Ser Gly Ser Thr
595 600 605

Gly Thr Pro Lys Gly Val Ala Ile Pro His Gly Gly Val Ala Ala Leu
610 615 620

Ala Gly Asp Pro Gly Trp Gly Val Gly Pro Gly Asp Ala Val Leu Met
625 630 635 640

His Ala Pro His Thr Phe Asp Ala Ser Leu Tyr Asp Val Trp Val Pro
645 650 655

Leu Val Ser Gly Ala Arg Val Met Ile Thr Glu Pro Gly Val Val Asp
660 665 670

Ala Glu Arg Leu Ala Gly His Val Ala Asp Gly Leu Thr Ala Val Asn
675 680 685

Phe Thr Ala Gly His Phe Arg Ala Leu Ala Gln Glu Ser Pro Glu Ser
690 695 700

Phe Ser Gly Leu Arg Glu Val Ala Ala Gly Gly Asp Val Val Pro Leu
705 710 715 720

Asp Val Val Glu Arg Val Arg Arg Ala Cys Pro Arg Leu Arg Val Trp
725 730 735

His Thr Tyr Gly Pro Thr Glu Thr Thr Leu Cys Ala Thr Trp Lys Ala
740 745 750

Ile Glu Pro Gly Asp Glu Val Gly Pro Val Leu Pro Ile Gly Arg Ala
755 760 765

Leu Pro Gly Arg Arg Leu Tyr Val Leu Asp Ala Phe Leu Arg Pro Leu
770 775 780

Pro Pro Gly Ile Ala Gly Asp Leu Tyr Leu Ala Gly Ala Gly Val Ala
785 790 795 800

His Gly Tyr Leu Gly Arg Ala Ser Leu Thr Ala Glu Arg Phe Val Ala
805 810 815

Asp Pro Phe Val Ala Gly Glu Arg Met Tyr Arg Thr Gly Asp Leu Ala
820 825 830

Tyr Trp Thr Gly Glu Gly Glu Leu Val Phe Ala Gly Arg Asp Asp Asp
835 840 845

Gln Val Lys Ile Arg Gly Tyr Arg Val Glu Pro Gly Glu Val Glu Ala
850 855 860

Val Leu Ala Gly Gln Pro Gly Val Asp Gln Ala Val Val Val Ala Arg
865 870 875 880

Glu Gly Arg Leu Leu Gly Tyr Val Val Ser Gly Gly Gly Val Asp Pro
885 890 895

Val Arg Leu Arg Glu Gly Val Ala Arg Val Leu Pro Glu Tyr Met Val
900 905 910

Pro Ala Ala Val Val Val Leu Gly Ala Val Pro Val Thr Ala Asn Gly
915 920 925

Lys Val Asp Arg Glu Ala Leu Pro Asp Pro Gly Phe Gly Gly Arg Val
930 935 940

Ser Gly Arg Glu Pro Arg Thr Glu Val Glu Arg Ala Leu Cys Gly Leu

120/138

100

105

110

Arg Asp Arg Cys Thr Leu Val His Ala Asp Met Thr Ala Phe Lys Leu
115 120 125

Gly Glu Arg Phe Gly Thr Ala Ile Leu Ser Pro Ser Thr Ile Asp Leu
130 135 140

Leu Asp Asp Ala Asp Arg Pro Gly Leu Tyr Ser Ser Val Arg Glu His
145 150 155 160

Leu Arg Pro Gly Gly Arg Phe Leu Leu Gly Met Ala Asn Pro Asp Ala
165 170 175

Ser Gly Arg Gln Glu Pro Leu Glu Arg Thr Gln Glu Phe Thr Gly Arg
180 185 190

Ser Gly Arg Arg Tyr Val Leu His Ala Lys Val Tyr Pro Ser Glu Glu
195 200 205

Ile Arg Asp Val Thr Ile His Pro Ala Asp Glu Ser Ala Asp Pro Phe
210 215 220

Val Ile Cys Val Asn Arg Phe Arg Val Ile Thr Pro Asp Gln Ile Ala
225 230 235 240

Arg Glu Leu Glu Gln Ala Gly Phe Asp Val Val Ala Arg Thr Pro Leu
245 250 255

Pro Gly Val Arg Asn His Glu Leu Val Leu Glu Ala Gln Trp Gly Ser
260 265 270

Val Glu Asp Ala His
275

<210> 29
<211> 531
<212> PRT
<213> Nonomuria

<400> 29

Met Ser Glu Glu Leu Leu Phe Leu Arg Pro Asp Thr Ile Ile Glu Pro
1 5 10 15

Leu Ala Asn Arg Phe Tyr Ala Ser Met Tyr Ala Thr Ala Pro Val Thr
20 25 30

Ala Ala Met Asn Leu Ala Phe Arg Asn Leu Pro Met Leu Glu Ser Tyr

35

40

45

Leu Ala Ser Pro Glu Trp His Phe Ala Ala Ala Arg Asp Pro Lys Phe
50 55 60

Arg Gly Gly Phe Phe Val Asn Ile Glu Glu Gln Arg Lys Asn Glu Val
65 70 75 80

Glu Ala Leu Leu Ala Ala Ile Arg Arg Asp Ser Ala Asp Val Leu Arg
85 90 95

Phe Ala Glu Ala Ile Ala Glu Ala Glu Lys Ile Ile Arg Glu Glu Ala
100 105 110

Thr Gly Tyr Asp Leu Arg Pro Leu Tyr Pro Lys Leu Pro Pro Glu Leu
115 120 125

Ser Gly Leu Val Glu Ile Ala Tyr Asp Thr Gly Asn Ala Ala Ser Leu
130 135 140

His Phe Leu Glu Pro Leu Ile Tyr Lys Ser Lys Ala Tyr Ala Glu Asp
145 150 155 160

Cys Gln Ser Val Gln Leu Ser Val Glu Thr Gly Ile Glu Arg Pro Phe
165 170 175

Val Met Ser Thr Pro Arg Leu Pro Ser Pro Asp Val Leu Glu Leu Asn
180 185 190

Ile Pro Phe Arg His Pro Gly Leu Glu Glu Leu Phe Leu Ser Arg Ile
195 200 205

Arg Pro Thr Thr Leu Ala Ala Leu Arg Glu Ala Leu Glu Leu Gly Asp
210 215 220

Ala Glu Ala Ala Arg Leu Ala Asp Leu Leu Val Pro Glu Pro Ser Leu
225 230 235 240

Ala Ser Asp Arg His Val Ala Ala Gly Ala Arg Ile Arg Tyr Trp Gly
245 250 255

His Ala Cys Leu Leu Met Gln Thr Pro Asp Val Ala Ile Met Thr Asp
260 265 270

Pro Phe Ile Ser Ala Asp Thr Asp Ala Thr Gly Arg Tyr Thr Tyr Asn
275 280 285

Asp Leu Pro Asp Arg Leu Asp Tyr Val Leu Ile Thr His Gly His Ser
290 295 300

Asp His Leu Val Pro Glu Thr Leu Leu Gln Leu Arg Gly Arg Val Gly
305 310 315 320

Thr Phe Val Val Pro Arg Thr Ser Arg Gly Asn Leu Cys Asp Pro Ser
325 330 335

Leu Ala Leu Tyr Leu Arg Ser Phe Gly Leu Pro Ala Ile Glu Val Asp
340 345 350

Asp Phe Asp Glu Ile Glu Phe Pro Gly Gly Lys Ile Val Ser Thr Pro
355 360 365

Phe Phe Gly Glu His Ala Asp Leu Asp Ile Arg Ala Lys Ser Thr Tyr
370 375 380

Trp Ile Asn Leu Gly Gly Lys Ser Ile Trp Val Gly Ala Asp Ser Ser
385 390 395 400

Gly Leu Asp Pro Val Leu Tyr Arg His Ile Arg Arg His Leu Gly Ala
405 410 415

Val Asn Ile Ala Phe Leu Gly Met Glu Cys Asp Gly Ala Pro Leu Asn
420 425 430

Trp Gln Tyr Gln Pro Phe Ile Thr Lys Ala Leu Pro Lys Lys Met Ser
435 440 445

Asp Ser Arg Lys Met Ser Gly Ser Asn Ala Glu Gln Ala Gly Ala Ile
450 455 460

Val Thr Glu Leu Gly Ala Glu Glu Ala Tyr Ile Tyr Ala Met Gly Glu
465 470 475 480

Glu Ser Trp Leu Gly His Val Met Ala Thr Ser Tyr Asn Glu Asp Ser
485 490 495

Tyr Gln Leu Gln Gln Ile Ala Glu Phe Glu Ala Trp Cys Ser Arg Lys
500 505 510

Gly Val Lys Ala Ala His Leu Leu Asp Gln His Glu Trp His Trp Ser
515 520 525

Ser Ser Arg
530

<210> 30
<211> 523
<212> PRT
<213> Nonomuria

<400> 30

Met Thr Gly Gly Thr Gly Ala Asp Ala Ala Ser Ala Gly Ala Ser Ser
1 5 10 15

Thr Arg Pro Glu Leu Arg Gly Glu Arg Cys Leu Pro Pro Ala Gly Pro
20 25 30

Val Lys Val Thr Pro Asp Asp Pro Arg Tyr Leu Asn Leu Lys Leu Arg
35 40 45

Gly Ala Asn Ser Arg Phe Asn Gly Glu Pro Asp Tyr Ile His Leu Val
50 55 60

Gly Ser Thr Gln Gln Val Ala Asp Ala Val Glu Glu Thr Val Arg Thr
65 70 75 80

Gly Lys Arg Val Ala Val Arg Ser Gly Gly His Cys Phe Glu Asp Phe
85 90 95

Val Asp Asn Pro Asp Val Lys Val Ile Ile Asp Met Ser Leu Leu Thr
100 105 110

Glu Ile Ala Tyr Asp Pro Ser Met Asn Ala Phe Leu Ile Glu Pro Gly
115 120 125

Asn Thr Leu Ser Glu Val Tyr Glu Lys Leu Tyr Leu Gly Trp Asn Val
130 135 140

Thr Ile Pro Gly Gly Val Cys Gly Gly Val Gly Val Gly Gly His Ile
145 150 155 160

Cys Gly Gly Gly Tyr Gly Pro Leu Ser Arg Gln Phe Gly Ser Val Val
165 170 175

Asp Tyr Leu Tyr Ala Val Glu Val Val Val Val Asn Lys Gln Gly Lys
180 185 190

Ala Arg Val Ile Val Ala Thr Arg Glu Arg Asp Asp Pro His His Asp
195 200 205

Leu Trp Trp Ala His Thr Gly Gly Gly Gly Gly Asn Phe Gly Val Val
210 215 220

124/138

Thr Lys Tyr Trp Met Arg Val Pro Glu Asp Val Gly Arg Asn Pro Glu
225 230 235 240

Arg Leu Leu Pro Lys Pro Pro Ala Thr Leu Leu Thr Ser Thr Val Thr
245 250 255

Phe Asp Trp Ala Gly Met Thr Glu Ala Ala Phe Ser Arg Leu Leu Arg
260 265 270

Asn His Gly Glu Trp Tyr Glu Arg Asn Ser Gly Pro Asp Ser Pro Tyr
275 280 285

Thr Gly Leu Trp Ser Gln Leu Met Ile Gly Asn Glu Val Pro Gly Met
290 295 300

Gly Glu Ser Gly Phe Met Met Pro Ile Gln Val Asp Ala Thr Arg Pro
305 310 315 320

Asp Ala Arg Arg Leu Leu Asp Ala His Ile Glu Ala Val Ile Asp Gly
325 330 335

Val Pro Pro Ala Glu Val Pro Glu Pro Ile Glu Gln Arg Trp Leu Ala
340 345 350

Ser Thr Pro Gly Arg Gly Gly Arg Gly Pro Ala Ser Lys Thr Lys Ala
355 360 365

Gly Tyr Leu Arg Lys Arg Leu Thr Asp Arg Gln Ile Gln Ala Val Tyr
370 375 380

Glu Asn Met Thr His Met Asp Gly Ile Asp Tyr Gly Ala Val Trp Leu
385 390 395 400

Ile Gly Tyr Gly Gly Lys Val Asn Thr Val Asp Pro Ala Ala Thr Ala
405 410 415

Leu Pro Gln Arg Asp Ala Ile Leu Lys Val Asn Tyr Ile Thr Gly Trp
420 425 430

Ala Asn Pro Gly Asn Glu Ala Lys His Leu Thr Trp Val Arg Lys Leu
435 440 445

Tyr Ala Asp Val Tyr Ala Glu Thr Gly Gly Val Pro Val Pro Asn Asp
450 455 460

Val Ser Asp Gly Ala Tyr Ile Asn Tyr Pro Asp Ser Asp Leu Ala Asp
465 470 475 480

Pro Gly Leu Asn Thr Ser Gly Val Pro Trp His Asp Leu Tyr Tyr Lys
485 490 495

Gly Asn His Pro Arg Leu Arg Lys Val Lys Ala Ala Tyr Asp Pro Arg
500 505 510

Asn His Phe His His Ala Leu Ser Ile Arg Pro
515 520

<210> 31
<211> 141
<212> PRT
<213> Nonomuria

<400> 31

Met Thr Ser Thr Ser Gly Arg His Leu Tyr His Arg Gln Val Arg Phe
1 5 10 15

Ser Asp Ile Asp Ala His Gly His Val Asn Asn Val Arg Phe Leu Glu
20 25 30

Tyr Leu Glu Asp Ala Trp Ile Ala Leu Tyr Leu Asp Asn Ala Gly Pro
35 40 45

Pro Gln Glu Asp Arg Asp Gly Leu Pro Ala Val Gly Phe Ala Val Val
50 55 60

Arg His Glu Ile Phe Tyr Arg Arg Pro Leu Arg Phe Arg His Gly Ser
65 70 75 80

Val Arg Val Glu Ser Trp Val Thr Lys Val Asn Arg Val Thr Cys Glu
85 90 95

Met Ala Ala Gln Ile Cys Ser Asp Gly Glu Val Phe Val Glu Ala Arg
100 105 110

Ser Met Ile Met Gly Phe Asp Thr His Thr Ala Lys Pro Arg Arg Leu
115 120 125

Thr Leu His Glu Arg Thr Phe Leu Lys Arg Tyr Leu Arg
130 135 140

<210> 32
<211> 372
<212> PRT
<213> Nonomuria

<400> 32

Met Gly Val Asp Val Ser Met Thr Thr Ser Ile Ala Ser Ala Glu Asp

Ala Ile Glu Ala Met Arg Tyr Asp Trp Asp Arg Asp Gln Asp Arg Phe
245 250 255

127/138

Ser Phe Phe Leu Asp Pro Gln Ile Pro Tyr Val Val Gly Ala His Ala
260 265 270

Glu Ile Val Val Asp Lys Leu Leu Ser Gly Thr Gly Leu Arg Arg Ser
275 280 285

Asp Ile Gly His Trp Leu Val His Ser Gly Gly Lys Lys Val Ile Asp
290 295 300

Ala Ile Val Val Asn Leu Gly Leu Ser Arg His Asp Val Arg His Thr
305 310 315 320

Thr Ala Val Leu Arg Asp Tyr Gly Asn Leu Ser Ser Gly Ser Phe Leu
325 330 335

Phe Ser Tyr Glu Arg Leu Ala Gly Glu Gly Val Thr Arg Pro Gly Asp
340 345 350

Tyr Gly Val Leu Met Thr Met Gly Pro Gly Ser Thr Ile Glu Thr Ala
355 360 365

Leu Ile Gln Trp
370

<210> 33
<211> 213
<212> PRT
<213> Nonomuria

<400> 33

Met Asn Gly Glu Leu Glu Leu Ser Leu Asp Gly Thr Gln Ala Leu Thr
1 5 10 15

Ala Ser Val Glu Glu Leu Asn Gly Leu Cys Asp Arg Ala Glu Asp His
20 25 30

Arg Ala Pro Gly Pro Val Ile Val His Val Thr Gly Val Pro Arg Leu
35 40 45

Gly Trp Ser Lys Gly Leu Thr Val Gly Leu Val Ser Lys Trp Glu Arg
50 55 60

Val Val Arg Arg Phe Glu Arg Leu Gly Arg Leu Thr Val Ala Val Ala
65 70 75 80

Ser Gly Asp Cys Ala Gly Pro Ser Leu Asp Leu Leu Leu Ala Ala Asp
85 90 95

128/138

Val Arg Ile Ala Ala Pro Ala Thr Arg Leu Leu Pro Ser Trp Ala Gly
100 105 110

Gly Ala Ala Trp Pro Gly Met Ala Val Tyr Arg Leu Thr Gln Gln Ala
115 120 125

Gly Thr Gly Gly Ile Arg Arg Ala Val Leu Leu Gly Ala Pro Ile Asp
130 135 140

Ala Asp Arg Ala Leu Ala Leu Asn Leu Ile Asp Glu Val Ser Ala Asp
145 150 155 160

Pro Ala Ala Ser Leu Ala Gly Leu Ala Gly Ala Gly Asp Gly Ala Glu
165 170 175

Leu Ala Ile Arg Arg Gln Leu Met Phe Glu Ala Ser Ser Thr Thr Phe
180 185 190

Glu Asp Ala Leu Gly Ala His Leu Ala Ala Val Asp Arg Ala Leu Arg
195 200 205

Arg Glu Thr Leu Ser
210

<210> 34
<211> 434
<212> PRT
<213> Nonomuria

<400> 34

Met Thr Thr Asp Trp Pro Ala Leu Pro Pro Arg Ala Pro Leu Ala Leu
1 5 10 15

Trp Thr Leu Thr Ala Glu Ala Gln Arg Val Asp Asp Leu Leu Ala Gly
20 25 30

Leu Pro Glu Pro Pro Ala Arg Thr Ser Ala Gln Arg Asp Ala Ala Ala
35 40 45

Ser Ala Leu Asp Lys Val Arg Arg Met Arg Ala Asp Tyr Met Glu Ala
50 55 60

His Ala Glu Glu Ile Tyr Gly Glu Leu Thr Ser Gly Arg Thr Arg His
65 70 75 80

Leu Arg Ile Asp Glu Leu Val Arg Ala Ala Ala Arg Ala Tyr Pro Gly
85 90 95

129/138

Leu Val Pro Thr Asp Glu Gln Met Ala Ala Glu Arg Ala Arg Pro Gln
100 105 110

Ala Glu Lys Glu Gly Arg Glu Ile Asp Gln Gly Ile Phe Leu Arg Gly
115 120 125

Val Leu Arg Ala Pro Lys Ala Gly Pro His Leu Leu Asp Ala Met Leu
130 135 140

Arg Pro Thr Pro Arg Ala Leu Glu Leu Leu Pro Glu Phe Ile Glu Ser
145 150 155 160

Gly Glu Val Arg Met Glu Ala Val Leu Leu Arg Arg Arg Asp Gly Val
165 170 175

Ala Tyr Leu Thr Leu Cys Arg Asp Asp Cys Leu Asn Ala Glu Asp Ala
180 185 190

Gln Gln Val Asp Asp Met Glu Thr Ala Val Asp Leu Ala Leu Leu Asp
195 200 205

Pro Gln Val Arg Val Gly Leu Leu Arg Gly Gly Glu Met Ser His Pro
210 215 220

Arg Tyr Arg Gly Arg Arg Val Phe Cys Ala Gly Val Asn Leu Lys Lys
225 230 235 240

Leu Ser Ser Gly Asp Ile Ser Leu Val Asp Phe Leu Leu Arg Arg Glu
245 250 255

Leu Gly Tyr Ile His Lys Ile Val Arg Gly Val Tyr Thr Asp Gly Ser
260 265 270

Trp His Ser Lys Leu Thr Asp Lys Pro Trp Met Ala Val Val Asp Ser
275 280 285

Phe Ala Ile Gly Gly Gly Ala Gln Leu Leu Leu Val Phe Asp Gln Val
290 295 300

Leu Ala Ala Ser Asp Ser Tyr Ile Ser Leu Pro Ala Ala Thr Glu Gly
305 310 315 320

Ile Ile Pro Gly Val Ala Asn Tyr Arg Leu Thr Arg Phe Thr Gly Pro
325 330 335

Arg Ala Ala Arg Gln Met Ile Leu Gly Gly Arg Arg Ile Arg Ala Asp
340 345 350

Glu Pro Asp Ala Arg Leu Met Ile Asp Glu Val Val Pro Pro Glu Glu
355 360 365

Met Asp Ala Ala Ile Asp Arg Ala Leu Ala Arg Leu Asp Gly Asp Ala
370 375 380

Val Pro Ala Asn Arg Arg Met Leu Asn Leu Ala Glu Glu Pro Pro Glu
385 390 395 400

Ala Phe Gly Arg Tyr Leu Ala Glu Phe Ala Leu Gln Gln Ala Leu Arg
405 410 415

Ile Tyr Gly Arg Asp Val Ile Gly Lys Val Gly Arg Phe Ala Ala Gly
420 425 430

Ser Ala

<210> 35
<211> 265
<212> PRT
<213> Nonomuria

<400> 35

Met Ser Glu Pro Arg Val Arg Tyr Glu Lys Lys Glu His Val Ala His
1 5 10 15

Val Thr Met Asn Arg Pro His Val Leu Asn Ala Met Asp Arg Arg Met
20 25 30

His Glu Glu Leu Ala Glu Ile Trp Asp Asp Val Glu Ala Asp Asp Asp
35 40 45

Val Arg Thr Val Val Leu Thr Gly Ala Gly Thr Arg Ala Phe Ser Val
50 55 60

Gly Gln Asp Leu Lys Glu Arg Ala Leu Leu Asp Glu Ala Gly Thr Gln
65 70 75 80

Ala Ser Thr Phe Gly Ser Arg Gly Gln Ala Gly His Pro Arg Leu Thr
85 90 95

Asp Arg Phe Thr Leu Ser Lys Pro Val Val Ala Arg Val His Gly Tyr
100 105 110

Ala Leu Gly Gly Gly Phe Glu Leu Val Leu Ala Cys Asp Leu Val Ile
115 120 125

Ala Ser Glu Glu Ala Val Phe Gly Leu Pro Glu Val Arg Leu Gly Leu
130 135 140

Ile Pro Gly Ala Gly Gly Val Phe Arg Leu Pro Arg Gln Leu Pro Gln
145 150 155 160

Lys Val Ala Met Gly His Leu Leu Thr Gly Arg Arg Met Asp Ala Ala
165 170 175

Thr Ala Phe Arg Tyr Gly Leu Val Asn Glu Val Val Pro Leu Asp Glu
180 185 190

Leu Asp Arg Cys Val Ala Gly Trp Thr Asp Asp Leu Val Arg Ala Ala
195 200 205

Pro Leu Ser Val Arg Ala Ile Lys Glu Ala Ala Met Arg Ser Leu Asp
210 215 220

Ile Pro Leu Glu Glu Ala Phe Thr Thr Ser Tyr Pro Trp Glu Glu Arg
225 230 235 240

Arg Arg Arg Ser Gly Asp Ala Ile Glu Gly Val Arg Ala Phe Val Glu
245 250 255

Lys Arg Asp Pro Val Trp Thr Ser Arg
260 265

<210> 36
<211> 428
<212> PRT
<213> Nonomuria

<400> 36

Met Ile Pro Pro His Thr Leu Leu Val Phe Phe Val Gln Ala Ala Ala
1 5 10 15

Leu Leu Leu Leu Ala Leu Leu Leu Gly Arg Leu Ala Val Arg Leu Gly
20 25 30

Leu Ala Ala Val Val Gly Glu Leu Cys Ala Gly Val Ile Leu Gly Pro
35 40 45

Ser Val Leu Gly Gln Val Ala Pro Gly Ala Glu Gln Trp Leu Phe Pro
50 55 60

Ser Pro Ser Ser His Met Leu Asp Ala Val Gly Gln Leu Gly Val Leu
65 70 75 80

Leu Leu Ile Gly Leu Thr Gly Ala His Leu Asp Leu Arg Leu Ile Arg
85 90 95

Arg Gln Gly Ala Thr Ala Val Arg Val Ser Ala Phe Gly Leu Val Val
100 105 110

Pro Met Ala Leu Gly Ile Gly Ala Gly Leu Leu Leu Pro Ala Glu Phe
115 120 125

Arg Gly Thr Gly Gly Ser Ala Val Phe Ala Leu Phe Leu Gly Val Thr
130 135 140

Met Cys Val Ser Ser Ile Pro Val Ile Ala Lys Thr Leu Met Asp Met
145 150 155 160

Asn Leu Leu His Arg Asn Val Gly Gln Leu Thr Leu Thr Ala Gly Met
165 170 175

Ile Asp Asp Ala Phe Gly Trp Val Leu Leu Ser Val Val Thr Ala Met
180 185 190

Ala Thr Ala Gly Ala Gly Ala Gly Thr Val Val Leu Ser Ile Ala Ser
195 200 205

Leu Leu Gly Val Ile Val Phe Ser Val Val Ile Gly Arg Pro Ala Val
210 215 220

Arg Val Ala Leu Arg Thr Thr Glu Asp Gln Gly Val Ile Ala Gly Gln
225 230 235 240

Val Val Val Leu Val Leu Ala Ala Ala Ala Gly Thr His Ala Leu Gly
245 250 255

Leu Glu Pro Ile Phe Gly Ala Phe Val Ala Gly Leu Leu Val Ser Thr
260 265 270

Ala Met Pro Asn Pro Val Arg Leu Ala Pro Leu Arg Thr Val Thr Leu
275 280 285

Gly Val Leu Ala Pro Leu Tyr Phe Ala Thr Met Gly Leu Arg Val Asp
290 295 300

Leu Thr Ala Leu Ala Arg Pro Glu Val Leu Ala Val Gly Leu Leu Val
305 310 315 320

Leu Ala Leu Ala Ile Ile Gly Lys Phe Leu Gly Ala Phe Leu Gly Ala
325 330 335

Trp Thr Ser Arg Leu Ser Arg Trp Glu Ala Leu Ala Leu Gly Ala Gly
340 345 350

Met Asn Ala Arg Gly Val Ile Gln Met Ile Val Ala Thr Val Gly Leu
355 360 365

Arg Leu Gly Val Ile Thr Asp Glu Ile Phe Thr Ile Ile Ile Val Val
370 375 380

Ala Val Ile Thr Ser Leu Leu Ala Pro Pro Leu Leu Arg Leu Ala Met
385 390 395 400

Thr Arg Ile Glu Ala Thr Ala Glu Glu Glu Ala Arg Leu Leu Ala Tyr
405 410 415

Gly Leu Arg Pro Gly Glu Ala Arg Glu Asp Val Arg
420 425

<210> 37
<211> 251
<212> PRT
<213> Nonomuria

<400> 37

Met Ser Thr Trp Phe Arg Cys Phe Asp Arg Arg Pro Leu Ala Thr Met
1 5 10 15

Arg Leu Ile Cys Phe Pro His Ala Gly Gly Ser Ala Val Phe Tyr Arg
20 25 30

Asn Trp His Arg Leu Ala Ala Pro Glu Ile Glu Val His Ala Val Gln
35 40 45

Tyr Pro Gly Arg Ala Asp Arg Leu His Glu Pro Leu Val Gly Asp Ala
50 55 60

His Arg Leu Ala Glu Ser Val Gly Arg Glu Leu Arg Pro Leu Leu Asp
65 70 75 80

Arg Pro Val Ala Leu Phe Gly His Ser Met Gly Ser Leu Ile Ala Tyr
85 90 95

Glu Thr Ala Arg Leu Leu Thr Gly Ser Gly Ile Pro Pro Ala His Leu
100 105 110

Phe Val Ser Gly Gly Val Ala Ala His Asp Arg Gly Arg Leu Ala His
115 120 125

Arg Val Ala Pro Ala Ser Glu Glu Ala Leu Ile Asp Arg Leu Arg Leu
130 135 140

Leu Gly Gly Thr Asp Ala Glu Ala Leu Ala Ser Ala Glu Phe Arg Ala
145 150 155 160

Phe Ala Leu Pro Tyr Val Arg Asn Asp Phe Gln Leu Val Gln Ser Tyr
165 170 175

Arg His Thr Pro Gly Pro Pro Leu Thr Val Pro Ile Thr Ala Phe Thr
180 185 190

Gly Ala Asp Asp Pro Val Val Arg Leu Asp Ala Val Ala Arg Trp Ala
195 200 205

Glu Leu Thr Ala Arg Glu Phe Ser Cys His Val Leu Pro Gly Gly His
210 215 220

Phe Phe Leu Gly His Glu Gln Ala Ala Leu Trp Ala His Leu His Ala
225 230 235 240

Arg Leu Gly Ile Ala Thr Pro Ala His Cys Gly
245 250

<210> 38
<211> 428
<212> PRT
<213> Nonomuria

<400> 38

Met Asp Ser His Val Leu Ala His Gln Leu Ser Lys Glu Thr Leu His
1 5 10 15

Gly Ser Leu Met Asp Pro Ala Ile Glu Ser Met Asn Leu Leu Asn Glu
20 25 30

Ile Ala Gly Asn Tyr Pro Asp Ala Ile Ser Met Ala Ala Gly Arg Pro
35 40 45

Tyr Glu Glu Phe Phe Asp Val Gly Leu Ile His Asp Tyr Leu Glu Ala
50 55 60

Tyr Arg Asp His Leu Arg Asn Asp Arg Arg Met Asp Asp Ala Gly Ile
65 70 75 80

Ser Arg Met Leu Phe Gln Tyr Gly Thr Thr Lys Gly Ile Ile Ser Asp
85 90 95

Leu Val Ala Arg His Leu Ala Glu Asp Glu Asn Ile Glu Ala Asp Pro
100 105 110

Ala Ser Val Val Ile Thr Val Gly Phe Gln Glu Ala Met Phe Leu Val
115 120 125

Leu Arg Ala Leu Arg Ala Asn Glu Arg Asp Val Leu Leu Ala Pro Thr
130 135 140

Pro Thr Tyr Val Gly Leu Thr Gly Ala Ala Leu Leu Thr Asp Thr Pro
145 150 155 160

Val Trp Pro Val Gln Ser Thr Asp Asn Gly Ile Asp Leu Asp His Leu
165 170 175

Glu His Gln Leu Lys Arg Ala Gln Asp Gln Gly Ala Arg Val Arg Ala
180 185 190

Cys Tyr Val Thr Pro Asn Phe Ala Asn Pro Thr Gly Thr Ser Met Asp
195 200 205

Leu Pro Ala Arg His Arg Leu Leu Glu Val Ala Ala Ala His Gly Ile
210 215 220

Leu Ile Leu Glu Asp Asn Ala Tyr Gly Leu Leu Gly Gln Asp Arg Leu
225 230 235 240

Pro Thr Leu Lys Ser Leu Asp His Ala Ala Thr Val Val Tyr Leu Gly
245 250 255

Ser Phe Ala Lys Thr Gly Met Pro Gly Ala Arg Val Gly Tyr Val Val
260 265 270

Ala Asp Gln His Val Ala Gly Gly Gly Ser Leu Ala Asp Glu Leu Ala
275 280 285

Lys Leu Lys Gly Met Leu Thr Val Asn Thr Ser Pro Ile Ala Gln Ala
290 295 300

Val Ile Ala Gly Lys Leu Leu Arg His Asp Phe Ser Leu Ala Arg Ala
305 310 315 320

Asn Ala Arg Glu Thr Ala Ile Tyr Gln Arg Asn Leu His Leu Thr Leu
325 330 335

Asp Glu Leu Thr Arg Arg Leu Gly Ala Val Pro Gly Val Thr Trp Asn

340

345

350

Ala Pro Thr Gly Gly Phe Phe Ile Thr Val Thr Val Pro Phe Val Val
355 360 365

Asp Asp Glu Leu Leu Glu His Ala Ala Arg Asp His Gly Val Leu Phe
370 375 380

Thr Pro Met His His Phe Tyr Gly Gly Lys Asp Gly Phe Asn Gln Leu
385 390 395 400

Arg Leu Ser Ile Ser Leu Leu Asn Pro Gln Leu Ile Glu Glu Gly Val
405 410 415

Ser Arg Leu Ala Gly Leu Val Thr Ala Cys Leu Pro
420 425

<210> 39
<211> 18
<212> DNA
<213> synthetic

<400> 39
atgcgcgtgt tgatctcg

18

<210> 40
<211> 18
<212> DNA
<213> synthetic

<400> 40
cggctgaccg cggcgaac

18

<210> 41
<211> 20
<212> DNA
<213> synthetic

<400> 41
cgtgggggtg gatgtatcga

20

<210> 42
<211> 17
<212> DNA
<213> synthetic

<400> 42
tcaccattgg atcagcg

17

<210> 43
<211> 18
<212> DNA

<400> 43

tcaggagacg aacccccgc

18

<210> 44
<211> 18
<212> DNA
<213> synthetic

<400> 44
gtgcacgaaa gtcccgtc

18

<210> 45
<211> 18
<212> DNA
<213> synthetic

<400> 45
atggactccc acgttctc

18

<210> 46
<211> 18
<212> DNA
<213> synthetic

<400> 46
tcaggggaga catgcggt

18

<210> 47
<211> 29
<212> DNA
<213> synthetic

<400> 47
ttttgaattc tcaggcgatc cgtccgtct

29

<210> 48
<211> 31
<212> DNA
<213> synthetic

<400> 48
tttttctaga gcccgacac ccgggggctg a

31

<210> 49
<211> 31
<212> DNA
<213> synthetic

<400> 49
tttttctaga agtcatggtg atgtgcgaca t

31

<210> 50
<211> 30
<212> DNA
<213> synthetic

<400> 50

ttttaagctt atgttgcagg acgccgaccg